brother

FACSIMILE EQUIPMENT

SERVICE MANUAL

MODEL: FAX2750/FAX-8250P
MFC4350/MFC4650/MFC6650MC/
MFC-9050/MFC-9550

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PREFACE

This publication is a Service Manual covering the specifications, construction, theory of operation, and maintenance of the Brother facsimile equipment. It includes information required for field troubleshooting and repair--disassembly, reassembly, and lubrication--so that service personnel will be able to understand equipment function, to rapidly repair the equipment and order any necessary spare parts.

To perform appropriate maintenance so that the facsimile equipment is always in best condition for the customer, the service personnel must adequately understand and apply this manual.

This manual is made up of six chapters and appendices.

CHAPTER I. GENERAL DESCRIPTION

CHAPTER II. INSTALLATION

CHAPTER III. THEORY OF OPERATION

CHAPTER IV. DISASSEMBLY/REASSEMBLY AND LUBRICATION

CHAPTER V. MAINTENANCE MODE

CHAPTER VI. ERROR INDICATION AND TROUBLESHOOTING

Appendix 1. EEPROM Customizing Codes

Appendix 2. Circuit Diagrams

This manual describes the models and their versions to be destined for major countries. The specifications and functions are subject to change depending upon each destination.

SAFETY INFORMATION

Laser Safety (110-120V Model only)

This printer is certified as a Class 1 laser product under the US Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

Since radiation emitted inside the printer is completely confined within the protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

CDRH Regulations (110-120V Model only)

The Center for Device and Radiological Health (CDRH) of the US Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The label shown below indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

The label for Japanese products

MANUFACTURED: MAY 1998 K BROTHER INDUSTRIES, LTD. 15-1 Naeshiro-cho, Mizuho-ku, Nagoya 467-8561, Japan. This product complies with FDA radiation performance standards, 21 CFR Subchapter J.

CHAPTER I.

GENERAL DESCRIPTION

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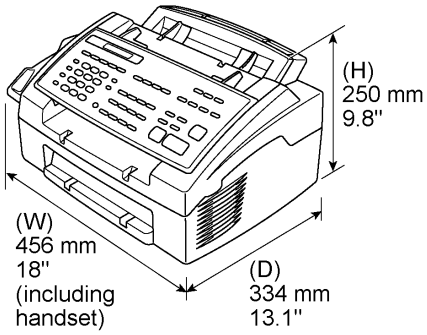
1. EQUIPMENT OUTLINE

1.1 External Appearance and Weight

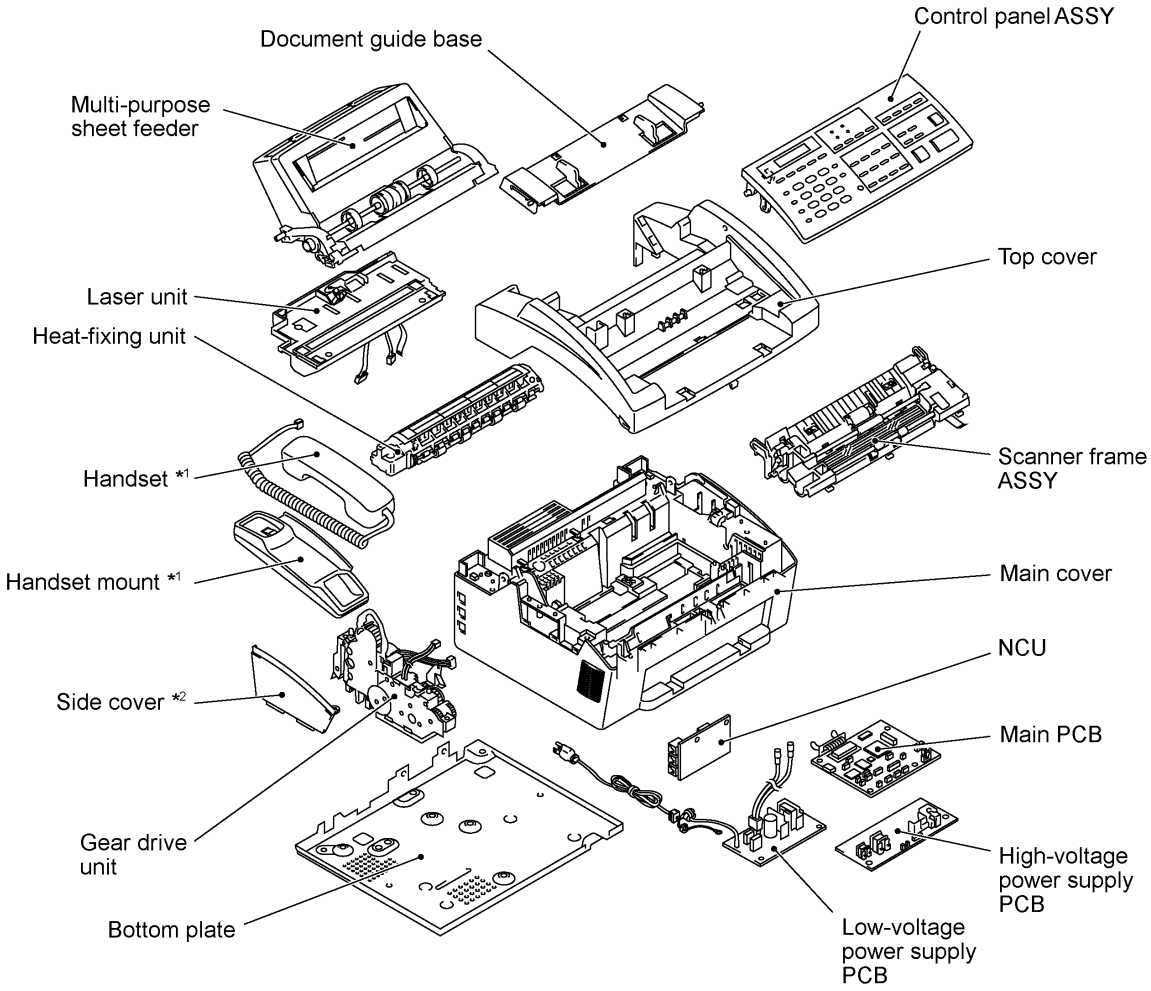
The figure below shows the equipment appearance and approximate dimensions.



Weight:	Machine proper	Approx. 7.2 kg
	Machine (incl. drum unit & toner cartridge)	Approx. 8.5 kg
	In package	Approx. 12 kg

1.2 Components

The equipment consists of the following major components:



*1 Not provided on the FAX-8250P/MFC-9050.
*2 Provided on the FAX-8250P/MFC-9050.

2. SPECIFICATIONS

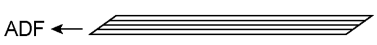
(1/2)

Model	FAX2750	MFC4350
Color	White (1397)	White (1138)
PRINTER	Available with option *1	Yes
Engine/Type	[YL (VA)]	YL (VA)
PPM	[6 ppm]	6 ppm
dpi (output resolution)	[600 x 600]	600 x 600
Paper Capacity	[200]	200
Emulation (Standard)	-	PCL4
Standards	[Windows GDI (600 x 600)]	Windows GDI (600 x 600)
Memory (Typical)	[1 MB]	1 MB
Memory (Min.)	[600 KB]	600 KB
Fonts Resident	-	-
Fonts Disk Based	[Yes - 35TT]	Yes - 4TT
Paper Handling	[LTR, LGL, A4, B5, A5, OHP]	LTR, LGL, A4, B5, A5, OHP
Multi-Purpose Sheet Feeder	[Custom Size (2.75 x 5, 8.5 x 14) Envelop (DL/C5/CM10/Mona)]	Custom Size (2.75 x 5, 8.5 x 14) Envelop (DL/C5/CM10/Mona)
Printer Driver	[Windows3.1/3.11, 95 and NT4.0 Driver with Auto Installer Program]	Windows3.1/3.11, 95 and NT4.0 Driver with Auto Installer Program
Utility Software	-	RPC
Period to go in Sleep Mode	[0-99]	0-99
Output Size	[LTR, LGL, A4, B5, A5]	LTR, LGL, A4, B5, A5
Optional LAN Board	No	No
Optional Mac Board	No	No
Interface/Interface Cable	[Yes (Bi Centro)/No]	Yes (Bi Centro)/Yes
SCANNER	Available with option *1	Available with option *1
Color/Mono	[Mono]	[Mono]
dpi	[OPT 200 x 400 (600 x 600)]	[OPT 200 x 400 (600 x 600)]
Gray Scale	[256]	[256]
Twain	[Yes]	[Yes]
Formats (Import)	[TIFF/BMP/PCX/DCX/BTF/ BTX/MAX/PDF]	[TIFF/BMP/PCX/DCX/BTF/ BTX/MAX/PDF]
Formats (Export)	[TIFF/BMP/MAX/PDF]	[TIFF/BMP/MAX/PDF]
ADF (pages)	[20] *2	[20] *2
OCR	[Xerox Textbridge]	[Xerox Textbridge]
COPY	Yes	Yes
dpi	203 x 391	203 x 391
Collating	99	99
Reduction/Enlargement	50, 75, 87, 93, 100, 120, 125, 150, 200%	50, 75, 87, 93, 100, 120, 125, 150, 200%
Sorting	Yes	Yes
FAX	Yes	Yes
Modem/Speed (bps)	Toshiba 3080 (14.4K FAX Only)	Toshiba 3080 (14.4K FAX Only)
CCITT Group	G3	G3
Coding Method	MH/MR/MMR	MH/MR/MMR
Error Correction Mode (ECM)	Yes	Yes
Transmission Speed (sec)	6	6
Gray Scale	64	64
Super Fine	Yes	Yes
Smoothing	Yes	Yes
Multi-Resolution TX	Yes	Yes
Input/Output Width	8.5" x 8.5"	8.5" x 8.5"
LCD Size	16 x 1	16 x 2
Handset	Yes	Yes
Duplex Speaker Phone	No	No

*1 Optional CD-ROM required.

*2 30 pages under the following conditions: - Temperature: 20°C to 30°C - RH: 50% to 70%

- Forms type: Xerox 4200 (20 lb/LTR), Xerox 4024 (24 lb/LTR), M.PPC (64 g/m^2/A4)
- Loading as shown at right.
  (Loading more than 20 pages in any other way will result in a double feed or paper jam.)



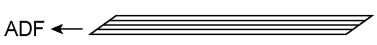
Specifications enclosed in brackets are available if options are used.

Model	MFC4650	MFC6650MC
Color	White (1138)	White (1138)
PRINTER	Yes	Yes
Engine/Type	YL (VA)	YL (VA)
PPM	6 ppm	6 ppm
dpi (output resolution)	600 x 600	600 x 600
Paper Capacity	200	200
Emulation (Standard)	PCL4	PCL4
Standards	Windows GDI (600 x 600)	Windows GDI (600 x 600)
Memory (Typical)	1 MB	1 MB
Memory (Min.)	600 KB	600 KB
Fonts Resident	-	24 bitMAP (PCL4Comp)
Fonts Disk Based	Yes - 35TT	Yes - 35TT
Paper Handling	LTR, LGL, A4, B5, A5, OHP	LTR, LGL, A4, B5, A5, OHP
Multi-Purpose Sheet Feeder	Custom Size (2.75 x 5, 8.5 x 14) Envelop (DL/C5/CM10/Mona)	Custom Size (2.75 x 5, 8.5 x 14) Envelop (DL/C5/CM10/Mona)
Printer Driver	Windows3.1/3.11, 95 and NT4.0 Driver with Auto Installer Program	Windows3.1/3.11, 95 and NT4.0 Driver with Auto Installer Program
Utility Software	RPC	RPC
Period to go in Sleep Mode	0-99	0-99
Output Size	LTR, LGL, A4, B5, A5	LTR, LGL, A4, B5, A5
Optional LAN Board	No	No
Optional Mac Board	No	No
Interface/Interface Cable	Yes (Bi Centro)/Yes	Yes (Bi Centro)/Yes
SCANNER	Yes	Yes
Color/Mono	Mono	Mono
dpi	OPT 200 x 400 (600 x 600)	OPT 200 x 400 (600 x 600)
Gray Scale	256	256
Twain	Yes	Yes
Formats (Import)	TIFF/BMP/PCX/DCX/BTF/ BTX/MAX/PDF	TIFF/BMP/PCX/DCX/BTF/ BTX/MAX/PDF
Formats (Export)	TIFF/BMP/MAX/PDF	TIFF/BMP/MAX/PDF
ADF (pages)	20 *2	20 *2
OCR	Yes (Xerox Textbridge)	Yes (Xerox Textbridge)
COPY	Yes	Yes
dpi	203 x 391	203 x 391
Collating	99	99
Reduction/Enlargement	50, 75, 87, 93, 100, 120, 125, 150, 200%	50, 75, 87, 93, 100, 120, 125, 150, 200%
Sorting	Yes	Yes
FAX	Yes	Yes
Modem/Speed (bps)	Toshiba 3080 (14.4K FAX Only)	Toshiba 3080 (14.4K FAX Only)
CCITT Group	G3	G3
Coding Method	MH/MR/MMR	MH/MR/MMR
Error Correction Mode (ECM)	Yes	Yes
Transmission Speed (sec)	6	6
Gray Scale	64	64
Super Fine	Yes	Yes
Smoothing	Yes	Yes
Multi-Resolution TX	Yes	Yes
Input/Output Width	8.5" x 8.5"	8.5" x 8.5"
LCD Size	16 x 2	16 x 2
Handset	Yes	Yes
Duplex Speaker Phone	No	No

*1 Optional CD-ROM required.

*2 30 pages under the following conditions: - Temperature: 20°C to 30°C - RH: 50% to 70%

- Forms type: Xerox 4200 (20 lb/LTR), Xerox 4024 (24 lb/LTR), M.PPC (64 g/m^2/A4)
- Loading as shown at right.
  (Loading more than 20 pages in any other way will result in a double feed or paper jam.)

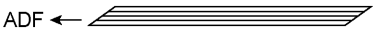


Specifications enclosed in brackets are available if options are used.

Model	FAX-8050P	FAX-8250P
Color	White (1397)	White (1397)
PRINTER	Available *3	Available with option *1
Engine/Type	[YL (VA)]	[YL (VA)]
PPM	[6 ppm]	[6 ppm]
dpi (output resolution)	[600 x 600]	[600 x 600]
Paper Capacity	[200]	[200]
Emulation (Standard)	-	-
Standards	[Windows GDI (600 x 600)]	[Windows GDI (600 x 600)]
Memory (Typical)	[1 MB]	[1 MB]
Memory (Min.)	[600 KB]	[600 KB]
Fonts Resident	-	-
Fonts Disk Based	-	[Yes - 35TT]
Paper Handling	[LTR, LGL, A4, B5, A5, OHP]	[LTR, LGL, A4, B5, A5, OHP]
Multi-Purpose Sheet Feeder	[Custom Size (2.75 x 5, 8.5 x 14) Envelop (DL/C5/CM10/Mona)]	[Custom Size (2.75 x 5, 8.5 x 14) Envelop (DL/C5/CM10/Mona)]
Printer Driver	Available *3	[Available with option (Windows3.1/3.11, 95 and NT4.0 Driver with Auto Installer Program)]
Utility Software	-	-
Period to go in Sleep Mode	[0-99]	[0-99]
Output Size	[LTR, LGL, A4, B5, A5]	[LTR, LGL, A4, B5, A5]
Optional LAN Board	No	No
Optional Mac Board	No	No
Interface Interface Cable	[Yes (Bi Centro) No]	[Yes (Bi Centro) No]
SCANNER	N/A	Available with option *1
Color/Mono	-	[Mono]
dpi	-	[OPT 200 x 400 (600 x 600)]
Gray Scale	-	[256]
Twain	-	[Yes]
Formats (Import)	-	[TIFF/BMP/PCX/DCX/BTF/ BTX/MAX/PDF]
Formats (Export)	-	[TIFF/BMP/MAX/PDF]
ADF (pages)	-	[20] *2
OCR	-	[Xerox Textbridge]
COPY	Yes (less than 2ppm)	Yes
dpi	203 x 391	203 x 391
Collating	99	99
Reduction/Enlargement	-	50, 75, 87, 93, 100, 120, 125, 150, 200%
Sorting	-	Yes
FAX	Yes	Yes
Modem/Speed (bps)	Toshiba 3080 (14.4K FAX Only)	Toshiba 3080 (14.4K FAX Only)
CCITT Group	G3	G3
Coding Method	MH/MR/MMR	MH/MR/MMR
Error Correction Mode (ECM)	Yes	Yes
Transmission Speed (sec)	6	6
Gray Scale	64	64
Super Fine	Yes	Yes
Smoothing	Yes	Yes
Multi-Resolution TX	Yes	Yes
Input/Output Width	8.5" x 8.5"	8.5" x 8.5"
LCD Size	16 x 1	16 x 1
Handset	No	No
Duplex Speaker Phone	No	No

*1 Optional CD-ROM required.

*2 30 pages under the following conditions: - Temperature: 20°C to 30°C - RH: 50% to 70%
- Forms type: Xerox 4200 (20 lb/LTR), Xerox 4024 (24 lb/LTR), M.PPC (64 g/m^2/A4)
- Loading as shown at right.
(Loading more than 20 pages in any other way will result in a double feed or paper jam.)

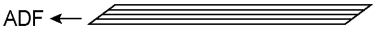


*2 Available, if HL-720 printer driver is used.
Specifications enclosed in brackets are available if options are used.

Model	MFC-9050	MFC-9550
Color	White (1138)	White (1138)
PRINTER	Yes	Yes
Engine/Type	YL (VA)	YL (VA)
PPM	6 ppm	6 ppm
dpi (output resolution)	600 x 600	600 x 600
Paper Capacity	200	200
Emulation (Standard)	-	PCL4
Standards	Windows GDI (600 x 600)	Windows GDI (600 x 600)
Memory (Typical)	1 MB	1 MB
Memory (Min.)	600 KB	600 KB
Fonts Resident	-	24 bitMAP (PCL4Comp)
Fonts Disk Based	-	Yes - 35TT
Paper Handling	LTR, LGL, A4, B5, A5, OHP	LTR, LGL, A4, B5, A5, OHP
Multi-Purpose Sheet Feeder	Custom Size (2.75 x 5, 8.5 x 14) Envelop (DL/C5/CM10/Mona)	Custom Size (2.75 x 5, 8.5 x 14) Envelop (DL/C5/CM10/Mona)
Printer Driver	Windows3.1/3.11, 95 and NT4.0 Driver with Auto Installer Program	Windows3.1/3.11, 95 and NT4.0 Driver with Auto Installer Program
Utility Software	-	RPC
Period to go in Sleep Mode	0-99	0-99
Output Size	LTR, LGL, A4, B5, A5	LTR, LGL, A4, B5, A5
Optional LAN Board	No	No
Optional Mac Board	No	No
Interface Interface Cable	Yes (Bi Centro) Yes <Germany version only>	Yes (Bi Centro) Yes <Germany version only>
SCANNER	Available with option *1	Yes
Color/Mono	[Mono]	Mono
dpi	[OPT 200 x 400 (600 x 600)]	OPT 200 x 400 (600 x 600)
Gray Scale	[256]	256
Twain	[Yes]	Yes
Formats (Import)	[TIFF/BMP/PCX/DCX/BTF/ BTX/MAX/PDF]	TIFF/BMP/PCX/DCX/BTF/ BTX/MAX/PDF
Formats (Export)	[TIFF/BMP/MAX/PDF]	TIFF/BMP/MAX/PDF
ADF (pages)	[20] *2	20 *2
OCR	[Xerox Textbridge]	Yes (Xerox Textbridge)
COPY	Yes	Yes
dpi	203 x 391	203 x 391
Collating	99	99
Reduction/Enlargement	50, 75, 87, 93, 100, 120, 125, 150, 200%	50, 75, 87, 93, 100, 120, 125, 150, 200%
Sorting	Yes	Yes
FAX	Yes	Yes
Modem/Speed (bps)	Toshiba 3080 (14.4K FAX Only)	Toshiba 3080 (14.4K FAX Only)
CCITT Group	G3	G3
Coding Method	MH/MR/MMR	MH/MR/MMR
Error Correction Mode (ECM)	Yes	Yes
Transmission Speed (sec)	6	6
Gray Scale	64	64
Super Fine	Yes	Yes
Smoothing	Yes	Yes
Multi-Resolution TX	Yes	Yes
Input/Output Width	8.5" x 8.5"	8.5" x 8.5"
LCD Size	16 x 2	16 x 2
Handset	No	Yes
Duplex Speaker Phone	No	No

*1 Optional CD-ROM required.

*2 30 pages under the following conditions: - Temperature: 20°C to 30°C - RH: 50% to 70%
- Forms type: Xerox 4200 (20 lb/LTR), Xerox 4024 (24 lb/LTR), M.PPC (64 g/m^2/A4)
- Loading as shown at right.
(Loading more than 20 pages in any other way will result in a double feed or paper jam.)



Specifications enclosed in brackets are available if options are used.

Model	FAX2750	MFC4350
One-touch Dial	12 x 2	12 x 2
Speed Dial	100	100
Tel-Index	Yes	Yes
Chain Dialing	Yes	Yes
Contrast	SL/Auto/SD	SL/Auto/SD
FAX/TEL Switch	Yes	Yes
Distinctive Ringing	Yes	Yes
Caller ID	Yes (Call Waiting)	Yes (Call Waiting)
TAD Interface	Yes	Yes
Next FAX Reservation	Yes, Dual Access	Yes, Dual Access
Dual Access	Yes	Yes
Help	Yes	Yes
Coverpage	Yes, Super	Yes, Super
Polling Type	Std/Seq	Std/Seq
Password Check	No	No
Delayed Timer	Yes, up to 50	Yes, up to 50
Broadcasting	Yes, up to 174	Yes, up to 174
Call Reservation	Yes	Yes
Page Memory (TX) *3	Max 1.3 MB (130 pages: MMR)	Max 1.3 MB (130 pages: MMR)
Out-of-paper Reception *3	Max 1.3 MB (130 pages: MMR)	Max 1.3 MB (130 pages: MMR)
Callback Message	Yes	Yes
Super Quickscan	Yes	Yes
Mail box	No	No
Multi-Transmission	No	No
Message Center	No	No
OGM	No	No
ICM Recording Time	No	No
Paging	Yes	Yes
Toll Saver	No	No
Fax & Voice Mail Box	No	No
Fax- & Voice-on-Demand	No	No
FAX Forwarding	Yes	Yes
FAX Retrieval	Yes	Yes
General		
Energy Star Compliance	Yes	Yes
Memory (Standard)	2 MB	2 MB
Memory (Opt Upgrade)	1/2 MB	1/2 MB
Simultaneous Operation	Available with option *1 (PRINTER/FAX, PRINTER/SCAN, PRINTER/COPY)	Yes (PRINTER/FAX, PRINTER/COPY) Available with option *1 (PRINTER/SCAN)
Data Modem	No	No
Bundled Software Applications	Available with option *1	Available with option *1
PC-FAX (Send/Receive)	[SMSI]	[SMSI]
Scanner Application	[Brother]	[Brother]
Viewer Application	[Visioneer]	[Visioneer]
Network Application	No	No
Class 1	No	No

*1 Optional CD-ROM required.
*3 According to the Brother chart in standard mode, MMR.

Specifications enclosed in brackets are available if options are used.

Model	MFC4650	MFC6650MC
One-touch Dial	12 x 2	12 x 2
Speed Dial	100	100
Tel-Index	Yes	Yes
Chain Dialing	Yes	Yes
Contrast	SL/Auto/SD	SL/Auto/SD
FAX/TEL Switch	Yes	Yes
Distinctive Ringing	Yes	Yes
Caller ID	Yes (Call Waiting)	Yes (Call Waiting)
TAD Interface	Yes	Yes
Next FAX Reservation	Yes, Dual Access	Yes, Dual Access
Dual Access	Yes	Yes
Help	Yes	Yes
Coverpage	Yes, Super	Yes, Super
Polling Type	Std/Seq	Std/Seq
Password Check	No	No
Delayed Timer	Yes, up to 50	Yes, up to 50
Broadcasting	Yes, up to 174	Yes, up to 174
Call Reservation	Yes	Yes
Page Memory (TX) *3	Max 1.3 MB (130 pages: MMR)	Max 1.3 MB (130 pages: MMR)
Out-of-paper Reception *3	Max 1.3 MB (130 pages: MMR)	Max 1.3 MB (130 pages: MMR)
Callback Message	Yes	Yes
Super Quickscan	Yes	Yes
Mail box	No	No
Multi-Transmission	No	No
Message Center	No	Yes (Hardware)
OGM	No	Yes (Hardware)
ICM Recording Time	No	Hardware: 20 min.
Paging	Yes	Yes (Hardware)
Toll Saver	No	Yes (Hardware)
Fax & Voice Mail Box	No	No
Fax- & Voice-on-Demand	No	No
FAX Forwarding	Yes	Yes
FAX Retrieval	Yes	Yes
General		
Energy Star Compliance	Yes	Yes
Memory (Standard)	2 MB	2 MB
Memory (Opt Upgrade)	1/2 MB	1/2 MB
Simultaneous Operation	Yes (PRINTER/FAX, PRINTER/SCAN, PRINTER/COPY)	Yes (PRINTER/FAX, PRINTER/SCAN, PRINTER/COPY)
Data Modem	No	No
Bundled Software Applications	Yes	Yes
PC-FAX (Send/Receive)	SMSI	SMSI
Scanner Application	Brother	Brother
Viewer Application	Visioneer	Visioneer
Class 1	No	Yes

*1 Optional CD-ROM required.
*3 According to the Brother chart in standard mode, MMR.

Specifications enclosed in brackets are available if options are used.

Model	FAX-8050P	FAX-8250P
One-touch Dial	12 x 2	12 x 2
Speed Dial	50	100
Tel-Index	Yes	Yes
Chain Dialing	Yes	Yes
Contrast	SL/Auto/SD	SL/Auto/SD
FAX/TEL Switch	Yes	Yes
Distinctive Ringing	No	Yes (Denmark version only)
Caller ID	No	Yes (U.K. French/Norway/Sweden versions only)
TAD Interface	Yes	Yes
Next FAX Reservation	Yes, Dual Access	Yes, Dual Access
Dual Access	Yes	Yes
Help	Yes	Yes
Coverpage	Yes, Super	Yes, Super
Polling Type	Std/Seq/Sec	Std/Seq/Sec
Password Check	No	No
Delayed Timer	Yes, up to 30	Yes, up to 50
Broadcasting	Yes, up to 104	Yes, up to 174
Call Reservation	Yes	Yes
Page Memory (TX) *3	Max 1 MB (100 pages: MMR)	Max 1.3 MB (130 pages: MMR)
Out-of-paper Reception *3	Max 1 MB (100 pages: MMR)	Max 1.3 MB (130 pages: MMR)
Callback Message	Yes	Yes
Super Quickscan	No	No
Mail box	No	No
Multi-Transmission	No	No
Message Center	No	No
OGM	No	No
ICM Recording Time	No	No
Paging	No	No
Fax & Voice Mail Box	No	No
Fax- & Voice-on-Demand	No	No
FAX Forwarding	Yes	Yes
FAX Retrieval	Yes	Yes
General		
Memory (Standard)	2 MB	2 MB
Memory (Opt Upgrade)	1/2 MB	1/2 MB
Simultaneous Operation	N/A	Available with option *1 (PRINTER/FAX, PRINTER/SCAN, PRINTER/COPY)
Data Modem	No	No
Remote Diagnostics	Yes	Yes
Memory Security	No	Yes
Memory Backup	No	Yes
Bundled Software Applications	N/A	Available with option *1
PC-FAX (Send/Receive)	-	[Wordcraft]
Scanner Application	-	[Brother]
Viewer Application	-	[Wordcraft]
Network Application	No	No
Class 1	No	No

*1 Optional CD-ROM required.
*3 According to the Brother chart in standard mode, MMR.

Specifications enclosed in brackets are available if options are used.

Model	MFC-9050	MFC-9550
One-touch Dial	12 x 2	12 x 2
Speed Dial	100	100
Tel-Index	Yes	Yes
Chain Dialing	Yes	Yes
Contrast	SL/Auto/SD	SL/Auto/SD
FAX/TEL Switch	Yes	Yes
Distinctive Ringing	Yes (Denmark version only)	No
Caller ID	Yes (U.K. French/Norway/Sweden versions only)	Yes (U.K. French/Norway/Sweden versions only)
TAD Interface	Yes	Yes
Next FAX Reservation	Yes, Dual Access	Yes, Dual Access
Dual Access	Yes	Yes
Help	Yes	Yes
Coverpage	Yes, Super	Yes, Super
Polling Type	Std/Seq/Sec	Std/Seq/Sec
Password Check	No	No
Delayed Timer	Yes, up to 50	Yes, up to 50
Broadcasting	Yes, up to 174	Yes, up to 174
Call Reservation	Yes	Yes
Page Memory (TX) *3	Max 1.3 MB (130 pages: MMR)	Max 1.3 MB (130 pages: MMR)
Out-of-paper Reception *3	Max 1.3 MB (130 pages: MMR)	Max 1.3 MB (130 pages: MMR)
Callback Message	Yes	Yes
Super Quickscan	No	No
Mail box	No	No
Multi-Transmission	No	No
Message Center	No	Yes (Hardware)
OGM	No	Yes (Hardware)
ICM Recording Time	No	Hardware: 15 min.
Paging	No	Yes (Hardware)
Fax & Voice Mail Box	No	No
Fax- & Voice-on-Demand	No	No
FAX Forwarding	Yes	Yes
FAX Retrieval	Yes	Yes
General		
Memory (Standard)	2 MB	2 MB
Memory (Opt Upgrade)	1/2 MB	1/2 MB
Simultaneous Operation	Yes (PRINTER/FAX, PRINTER/SCAN, PRINTER/COPY)	Yes (PRINTER/FAX, PRINTER/SCAN, PRINTER/COPY)
Data Modem	No	No
Remote Diagnostics	Yes	Yes
Memory Security	No	No
Memory Backup	No	Yes
Bundled Software Applications	Available with option *1	Yes
PC-FAX (Send/Receive)	[Wordcraft]	Wordcraft
Scanner Application	[Brother]	Brother
Viewer Application	[Wordcraft]	Wordcraft
Class 1	No	Yes

*1 Optional CD-ROM required.
*3 According to the Brother chart in standard mode, MMR.

Specifications enclosed in brackets are available if options are used.

CHAPTER II.

INSTALLATION

CONTENTS

1. INSTALLING THE UPDATE DATA TO THE FACSIMILE EQUIPMENT..... II-1

1. INSTALLING THE UPDATE DATA TO THE FACSIMILE EQUIPMENT

If the program version is updated or the main PCB is replaced, install the update program onto the flash ROM of the main PCB.

The program installation requires a host computer satisfying the following requirements:

- CPU Pentium 75 or higher
- RAM 8MB or greater (16MB recommended for Windows® 95)
- OS Windows® 3.1/3.11 or Windows® 95

Connecting the equipment to your computer

(1) Make sure that the equipment's power cord is unplugged from a wall socket.

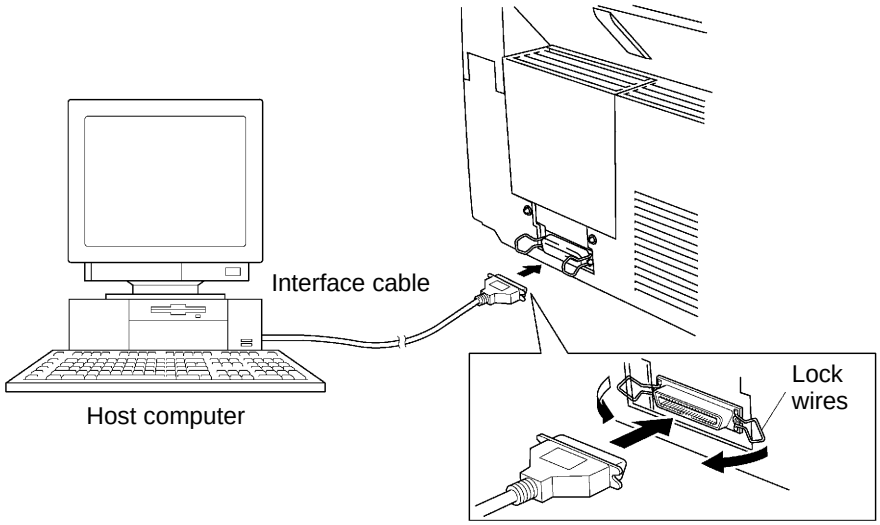
(2) Make sure that your computer is powered off.

(3) Connect the interface cable to the parallel interface port on the back of the equipment and secure it with the lock wires.

(4) Connect the other end of the interface cable to the printer port of your computer and secure it with the two screws.

(5) Power on your computer.

(6) Plug the equipment's power cord into a wall socket.



Installing the update data onto the flash ROM of the facsimile equipment

(1) Load the floppy disk which stores the update data and transfer utility into the floppy disk drive of your computer.

(Or, copy the update data and transfer utility onto the same directory of the hard disk.)

(2) Click the Start button, point to Programs, and then click MS-DOS Prompt to open an MS-DOS window.

(3) Type the drive letter where the update data and transfer utility are located. If it is a floppy disk drive, type `A:\` from the command line and press the **ENTER** key.

(4) Check that your computer is connected with the facsimile equipment correctly.

(5) To start the transfer utility transmitting the update data to the flash ROM of the facsimile equipment, type the following:

`A:\ICEN` *`filename`* `/b`

Then press the **ENTER** key.

The equipment beeps and shows the "CONNECTING" on the LCD for one second.

Then, the equipment shows the "DOWNLOADING" on the LCD and starts receiving data downloaded from the host computer.

During downloading, the equipment beeps *intermittently*.

Upon completion of the downloading, the equipment beeps *continuously*.

CHAPTER III.

THEORY OF OPERATION

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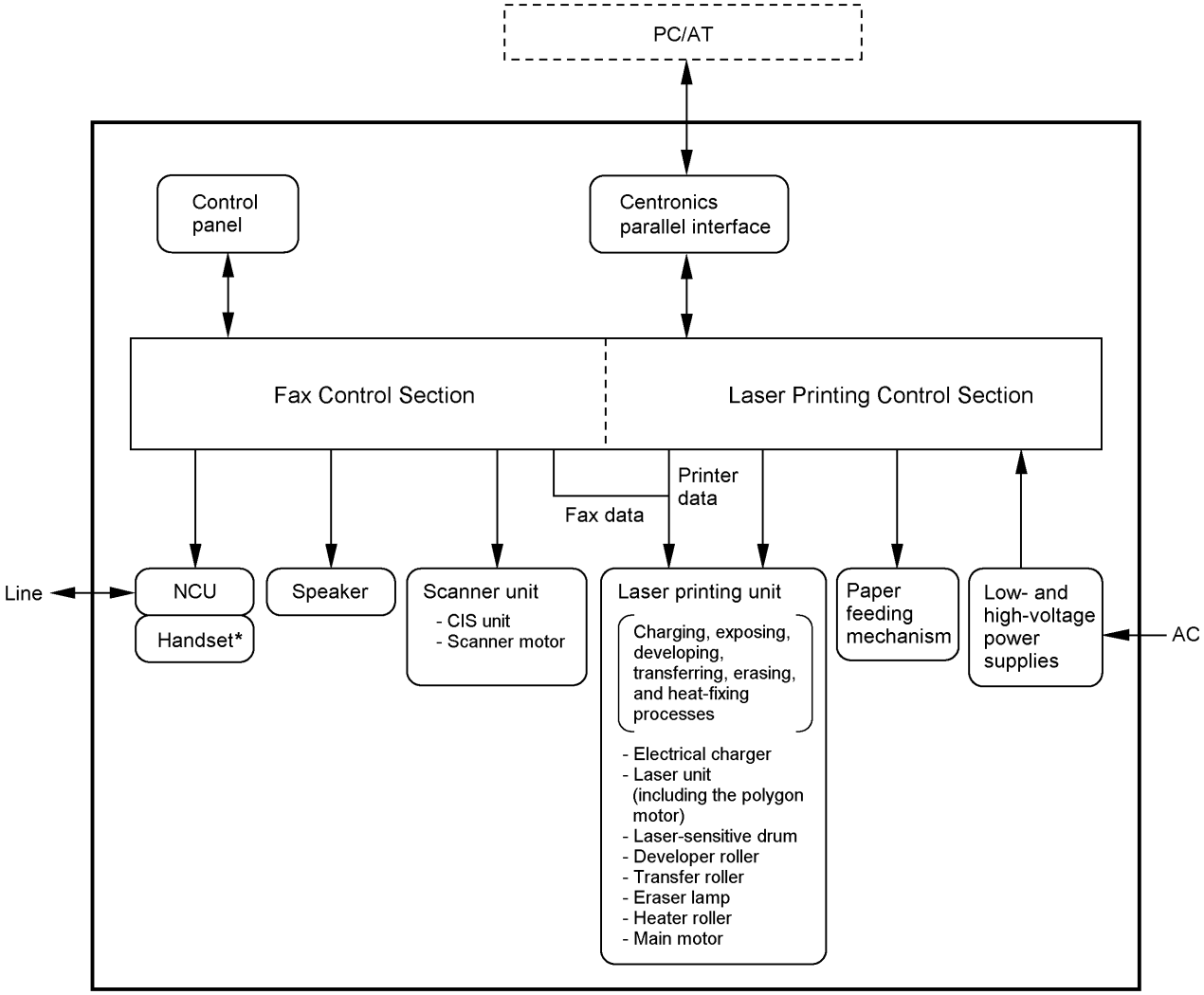
[2] High-voltage power supply PCB III-19

1. OVERVIEW

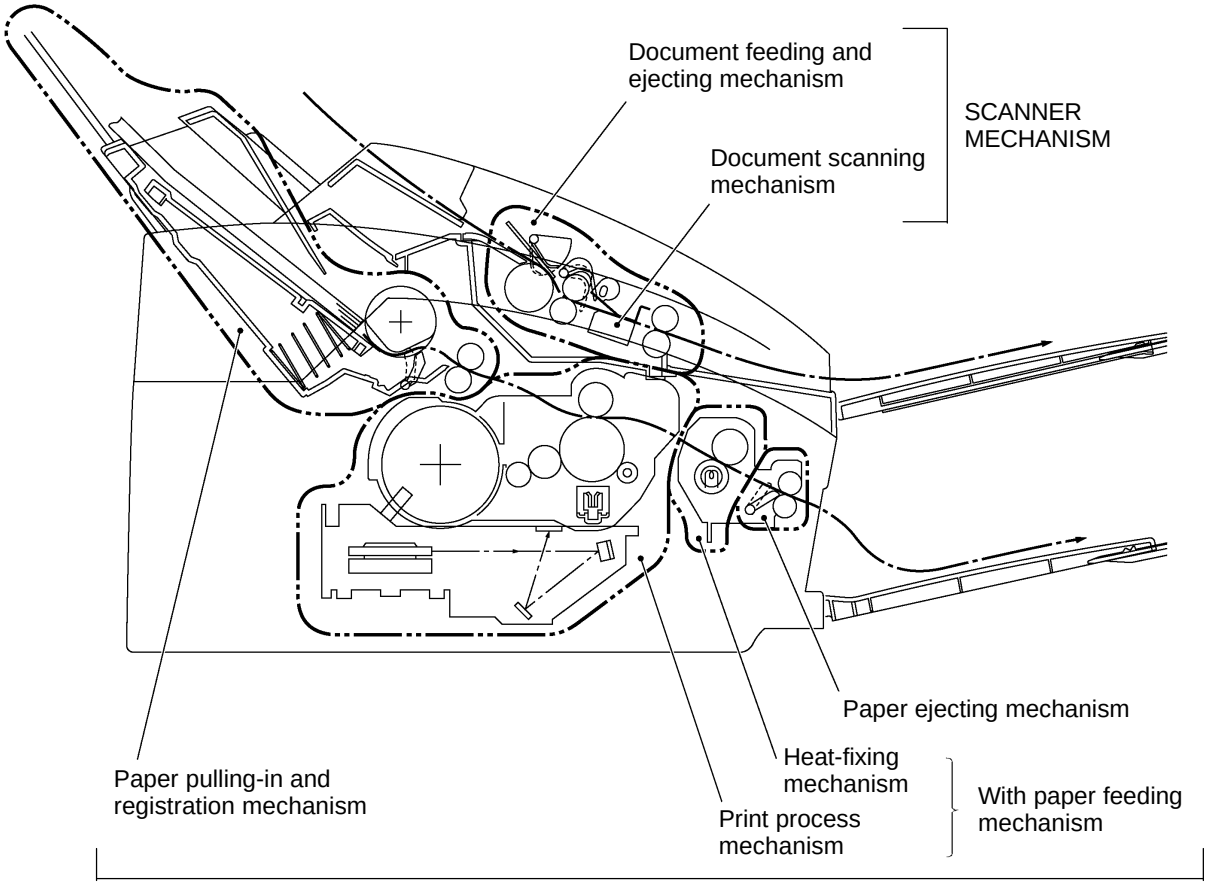


*Not provided on the FAX-8250P/MFC-9050.

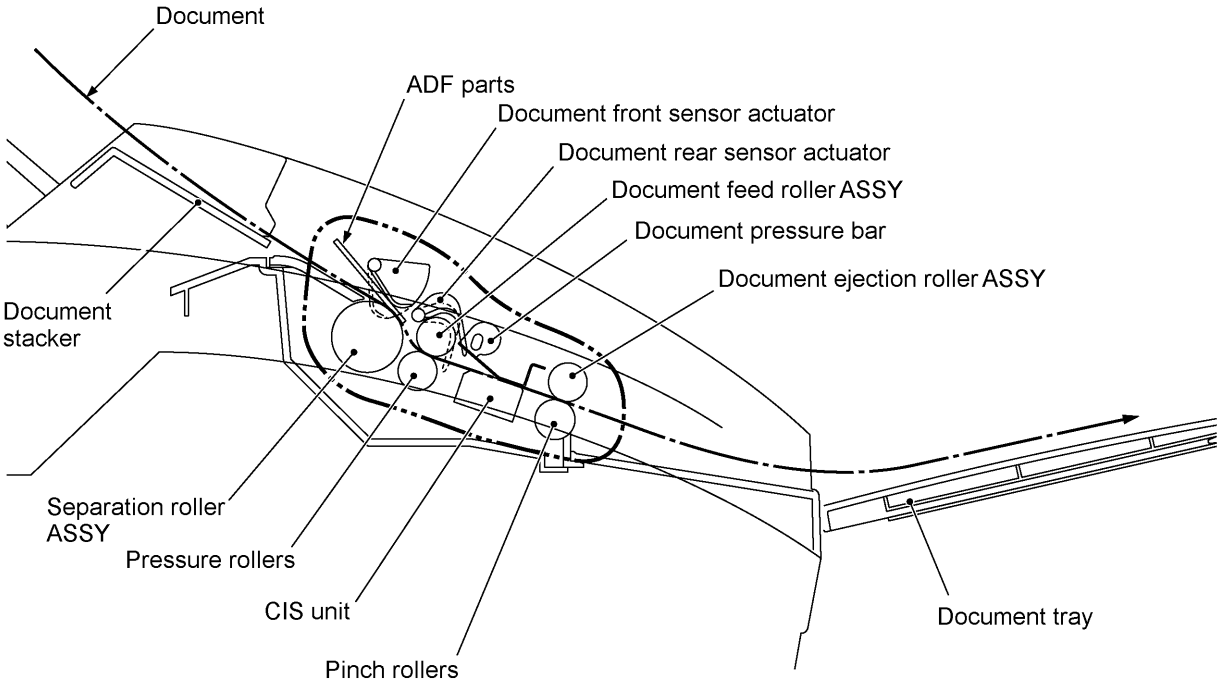
2. MECHANISMS

The facsimile equipment is classified into the following mechanisms:

SCANNER MECHANISM	- Document feeding and ejecting mechanism
	- Document scanning mechanism
LASER PRINTING MECHANISM	- Paper pulling-in, registration, feeding, and ejecting mechanisms
	- Print process mechanism (consisting of charging, exposing, developing, transferring, and erasing processes)
	- Heat-fixing mechanism
SENSORS AND ACTUATORS	



2.1 Scanner Mechanism



2.1.1 Document feeding and ejecting mechanism

This mechanism consists of the document stacker, automatic document feeder (ADF), document ejection roller ASSY, and document sensors. (For details about the sensors, refer to Section 2.3.)

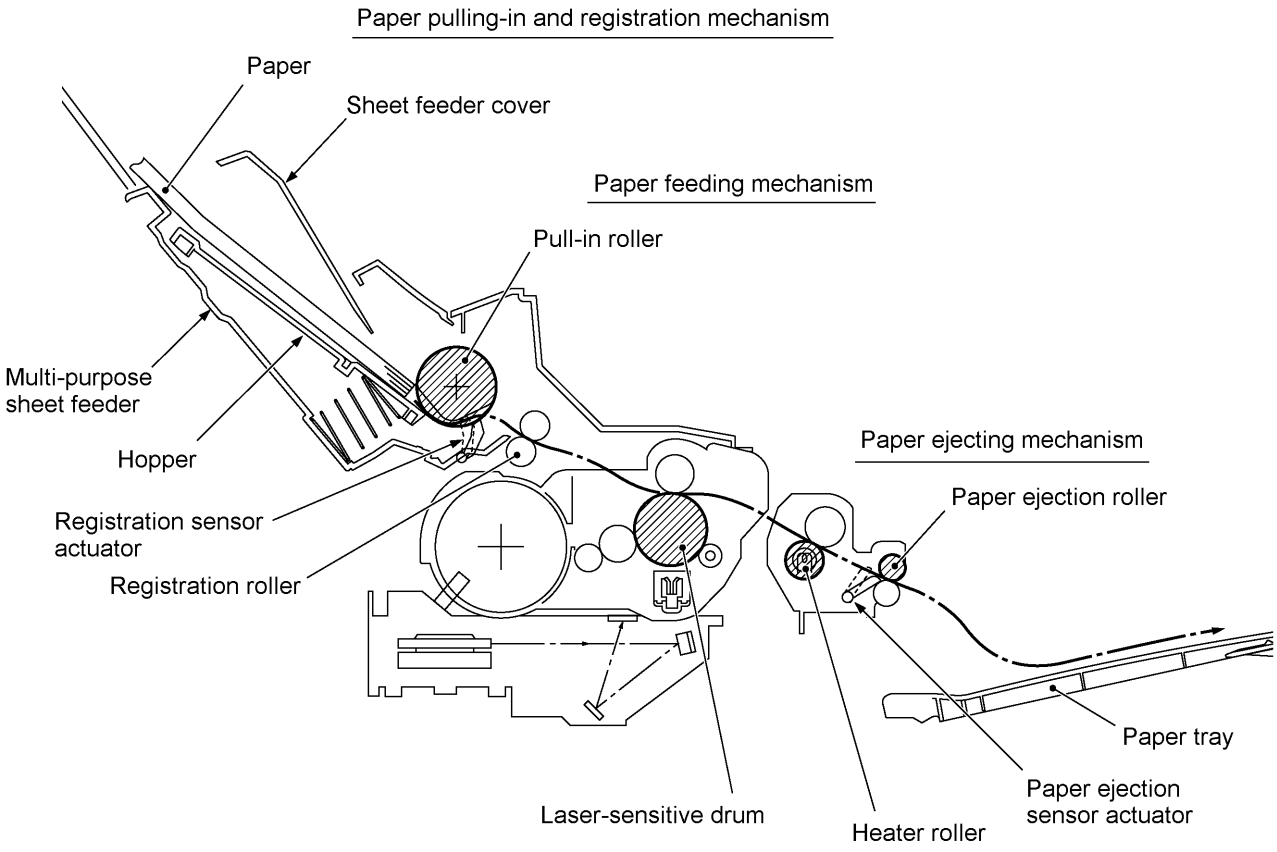
If the operator sets documents on the document stacker and starts the scanning operation, the scanner motor rotates so that the ADF (which consists of the separation roller and ADF parts) feeds those documents into the equipment, starting from the bottom sheet to the top, page by page. Each document advances with the document feed roller ASSY to the scanner, and then it is fed out of the equipment with the document ejection roller ASSY.

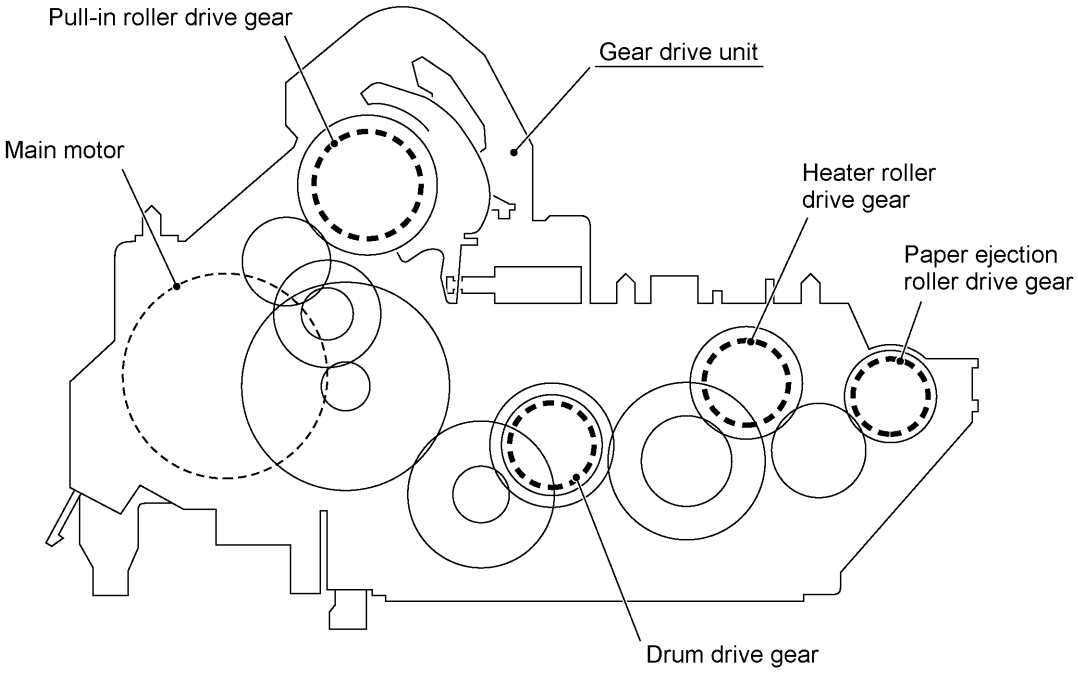
2.1.2 Scanner

The scanner uses a contact image sensor (CIS) unit which consists of an LED array illuminating documents, a self-focus lens array collecting the reflected light, a CIS PCB carrying out photoelectric conversion to output picture element data, and a cover glass on which a document advances. When the document passes between the document pressure bar and the cover glass, it is scanned.

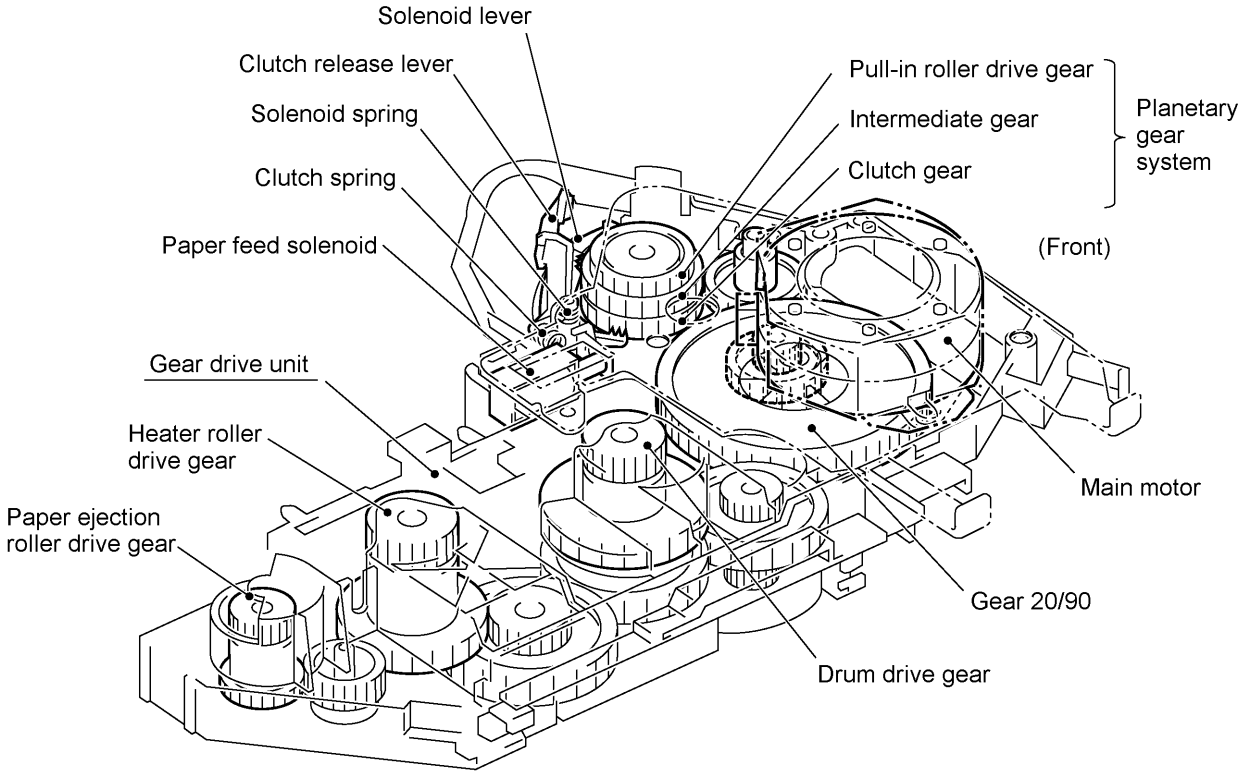
2.2 Laser Printing Mechanism

2.2.1 Paper pulling-in, registration, feeding, and ejecting mechanism





Paper pulling-in and registration mechanism



The paper pulling-in and registration mechanism consists of the pull-in roller gear (incorporated in the multi-purpose sheet feeder), planetary gear system, paper feed solenoid, solenoid lever, clutch release lever, and registration sensor. (For the details about the sensor, refer to Section 2.3.)

If the main motor rotates clockwise, the rotation is transmitted to the intermediate gear of the planetary gear system. As the intermediate gear rotates, the pull-in roller drive gear also rotates since the clutch gear is locked by the solenoid lever and the clutch release lever. Accordingly, the pull-in roller in the multi-purpose sheet feeder rotates to pull in paper into the equipment, a sheet at a time.

If the paper feed solenoid is retracted and the clutch release lever is operated according to the cam profile of the pull-in roller gear so as to release the clutch gear, the clutch gear rotates and the pull-in roller drive gear does not rotate. In this way, the clutch gear switches the transmission of the motor rotation to the pull-in roller drive gear on and off.

The solenoid on/off timing and the clutch release lever timing allow this mechanism to pull in a sheet and register it against the registration roller.

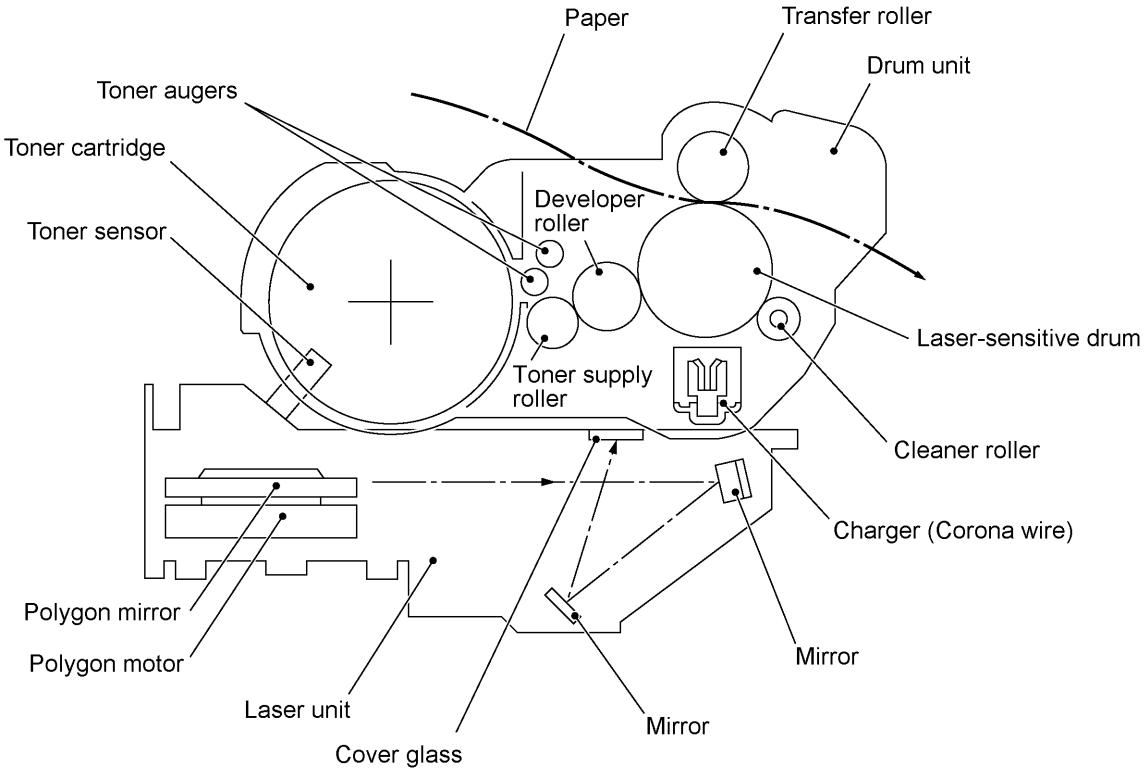
Paper feeding and ejecting mechanism

If the main motor rotates clockwise, the rotation is transmitted via the gear train to the drum drive gear, heater roller drive gear, and paper ejection roller drive gear.

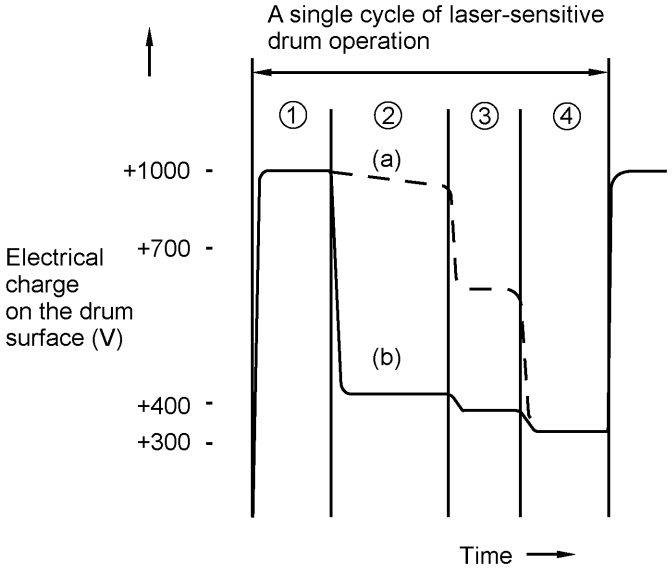
After the paper passes through the heat-fixing process, it will be ejected onto the paper tray.

If the leading edge of the paper pushes up the actuator of the paper ejection sensor, the photosensor becomes opened, signaling the start of paper ejection. If the trailing edge has passed through the sensor actuator, the sensor becomes closed, signaling the completion of paper ejection. Then, the main motor stops rotation.

2.2.2 Print process mechanism



The print process unit works with laser beam, electrical charges, and toner. The graph below shows the transition of electrical charge on the surface of the laser-sensitive drum through the five processes: charging, exposing, developing, transferring, and erasing processes.



① Charges the drum surface positively.

② Exposes the drum surface to a laser beam to form a latent image and develops the latent image with toner.

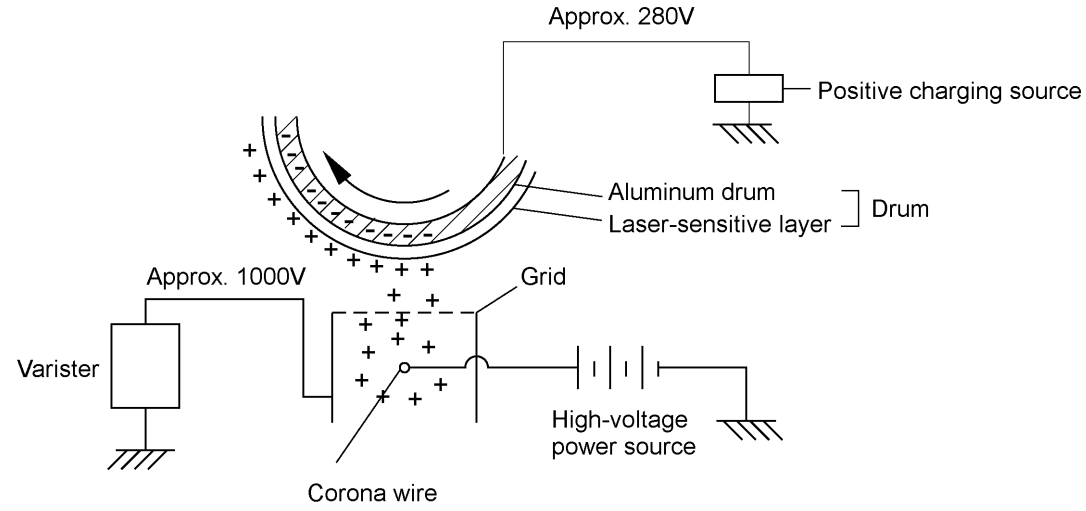
(a) Unexposed area (Non-image area)
(b) Exposed area (Image area)

③ Transfers the toner-formed image from the drum to paper.

④ Erases the residual potential.

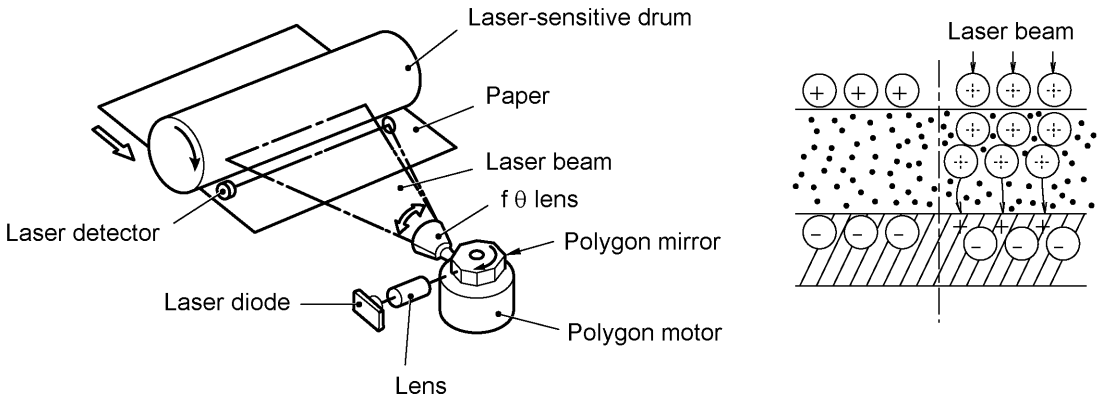
(1) Charging process

The high-voltage power supply applies DC bias to the corona wire to generate ion on the grid. The ion uniformly charges the surface of the laser-sensitive drum to approx. 1000V which is kept by the varister grounding the grid to the frame.



(2) Exposing process

When the laser-sensitive drum holds a positive electrical charge, the laser beam issued from the laser unit scans the drum according to the print image to expose the drum surface for neutralizing the spots where black should be, forming an electrostatic latent image.



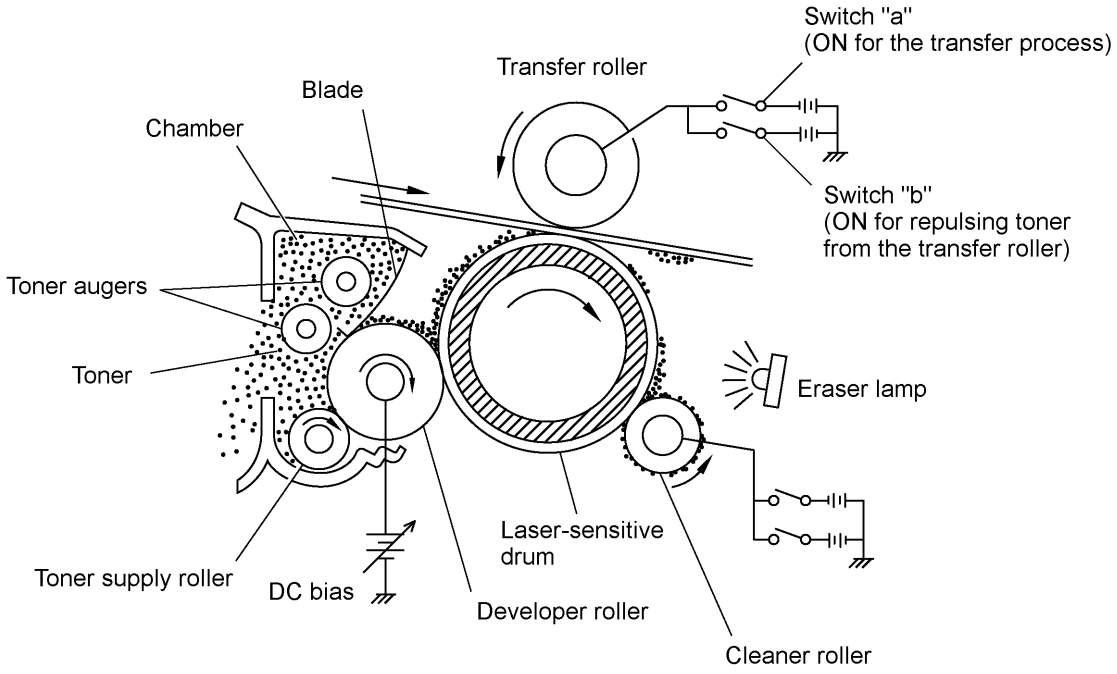
(3) Developing process

The developing process develops an electrostatic latent image formed on the drum in the exposing process, into a toner image.

The developer roller attracts the toner particles fed from the toner cartridge by the toner supply roller, and then conveys them to the contact section with the laser-sensitive drum

On the contact section between the developer roller and drum, the positive toner particles stick to the neutralized spots on the drum according to the principles of attraction and repulsion, transforming a latent image into a toner image.

The toner augers (which agitate toner particles in the chamber) and the blade allow toner particles to be fed onto the developer roller at an even thickness.



(4) Transferring process

When a paper passes between the drum and the transfer roller, the switch "a" (see the above illustration) is turned on to negatively charge the transfer roller. The toner is positive, so the toner image formed on the drum will be transferred onto the paper according to the same principle as for the developing process.

If the toner image fails to stick to the paper due to paper jam or other errors, it will stick to the transfer roller. To repulse this toner, the switch "b" (see the above illustration) is turned on to positively charge the transfer roller. The toner returns from the transfer roller to the drum.

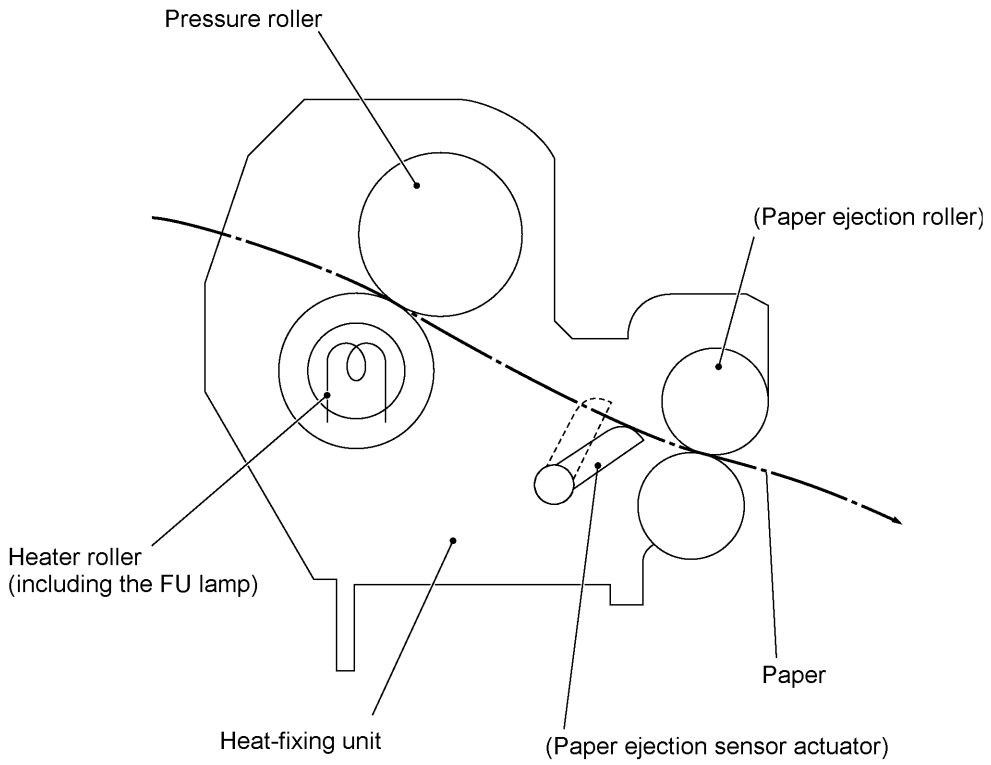
Cleaning the drum

In the transferring process, not all the toner particles on the drum are transferred onto the paper but some toner particles remain on the drum. The cleaner roller cleans the drum surface and collects the residual toner. When printing starts or during non-printing, the toner collected on the cleaner roller will be discharged onto the drum and returned to the chamber through the developer roller for recycling in the subsequent developing process.

(5) Erasing process

The eraser lamp emits light to expose the drum surface, which erases the residual electrical charge.

2.2.3 Heat-fixing mechanism



As the paper passes between the heater roller and the pressure roller in the heat-fixing unit, the heater roller fuses the toner on the paper.

2.3 Sensors and Actuators

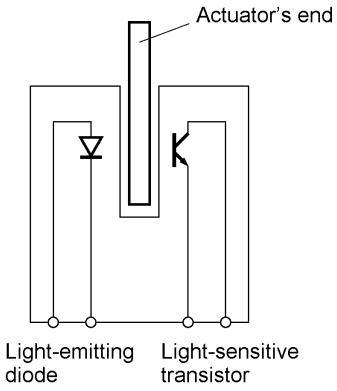
This equipment has ten sensors: seven photosensors, two thermisters and a mechanical switch as described below.

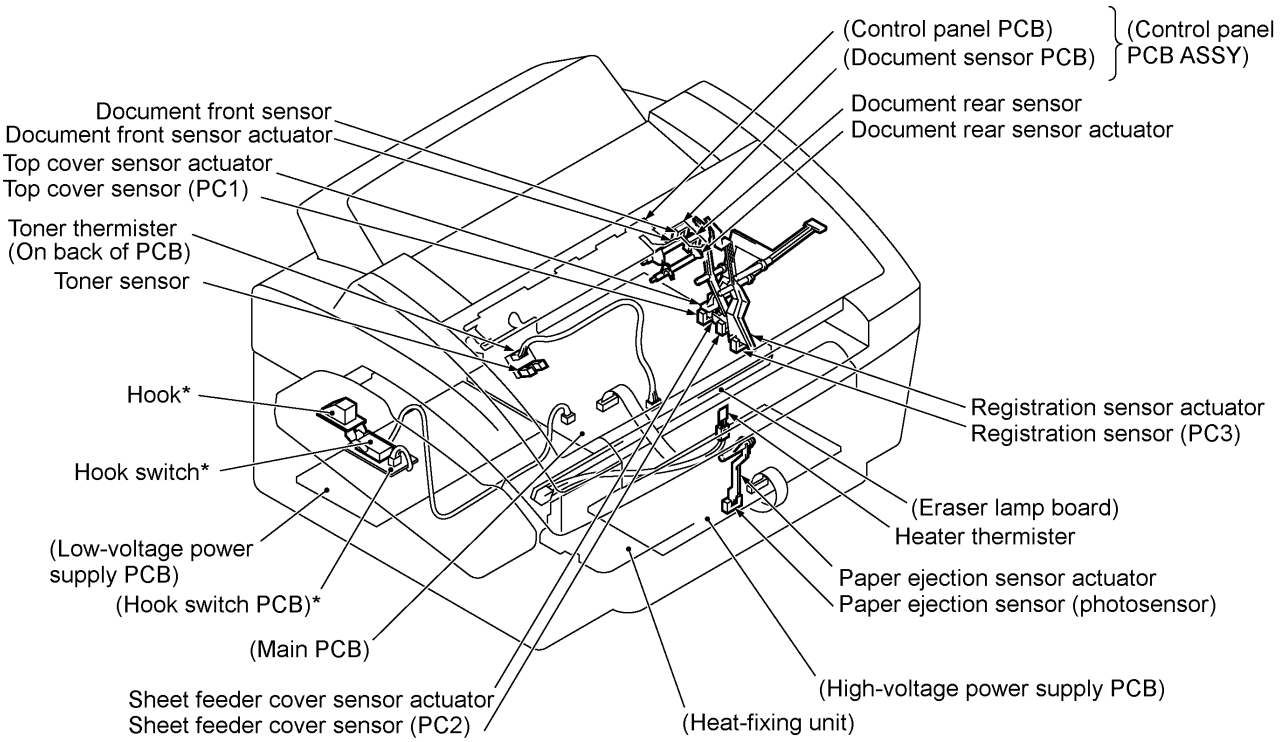
Sensor name	Type	Located on
Document front sensor	Photosensor	Control panel PCB ASSY (Document sensor PCB)
Document rear sensor	Photosensor	Control panel PCB ASSY (Document sensor PCB)
Top cover sensor	Photosensor	Main PCB
Sheet feeder cover sensor	Photosensor	Main PCB
Registration sensor	Photosensor	Main PCB
Paper ejection sensor	Photosensor	High-voltage power supply PCB
Toner sensor	Photosensor	Toner sensor PCB
Toner thermister	Thermister	Toner sensor PCB
Heater thermister	Thermister	Heat-fixing unit
Hook switch*	Mechanical switch	Hook switch PCB*

*Not provided on the FAX-8250P/MFC-9050.

- Document front sensor which detects the presence of documents.
- Document rear sensor which detects the leading and trailing edges of pages to tell the control circuitry when the leading edge of a new page has reached the starting position and when the scan for that page is over.
- Top cover sensor which detects whether the top cover is closed.
- Sheet feeder cover sensor which detects whether the sheet feeder cover is closed.
- Registration sensor which detects the leading and trailing edges of paper, which allows the controller to determine the registration timing and check paper jam.
- Paper ejection sensor which detects whether the recording paper goes out of the equipment.
- Toner sensor which detects whether there is toner or a toner cartridge is loaded.
- Toner thermister which detects the ambient temperature of the toner cartridge.
- Heater thermister which detects the temperature of the heater roller of the fixing unit.
- Hook switch* which detects whether the handset is placed on the handset mount.

These photosensors are a photointerrupter consisting of a light-emitting diode and a light-sensitive transistor. Each of them has an actuator separately arranged as shown on the next page.





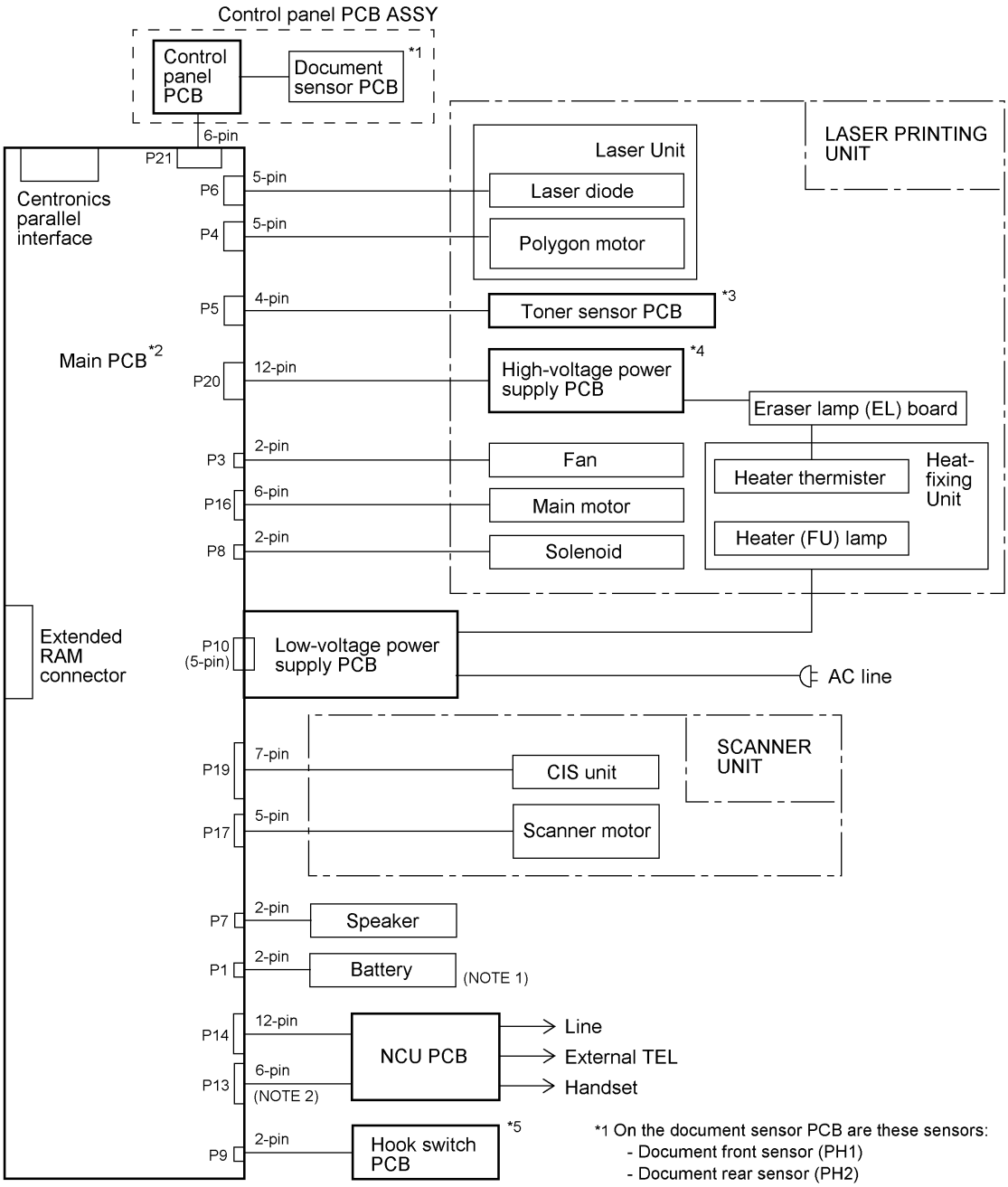
*Not provided on the FAX-8250P/MFC-9050.

Location of Sensors and Actuators

3. CONTROL ELECTRONICS

3.1 Configuration

The hardware configuration of the facsimile equipment is shown below.



(NOTE 1) Provided on the FAX-8250P/MFC-9050 (French version only)/MFC-9550/MFC6650MC.

(NOTE 2) Provided on the European, Australian, Indonesian, and Asian versions.

*1 On the document sensor PCB are these sensors:
- Document front sensor (PH1)
- Document rear sensor (PH2)

*2 On the main PCB are these sensors:
- Top cover sensor (PC1)
- Sheet feeder cover sensor (PC2)
- Registration sensor (PC3)

*3 On the toner sensor PCB are these sensors:
- Toner sensor
- Toner thermister

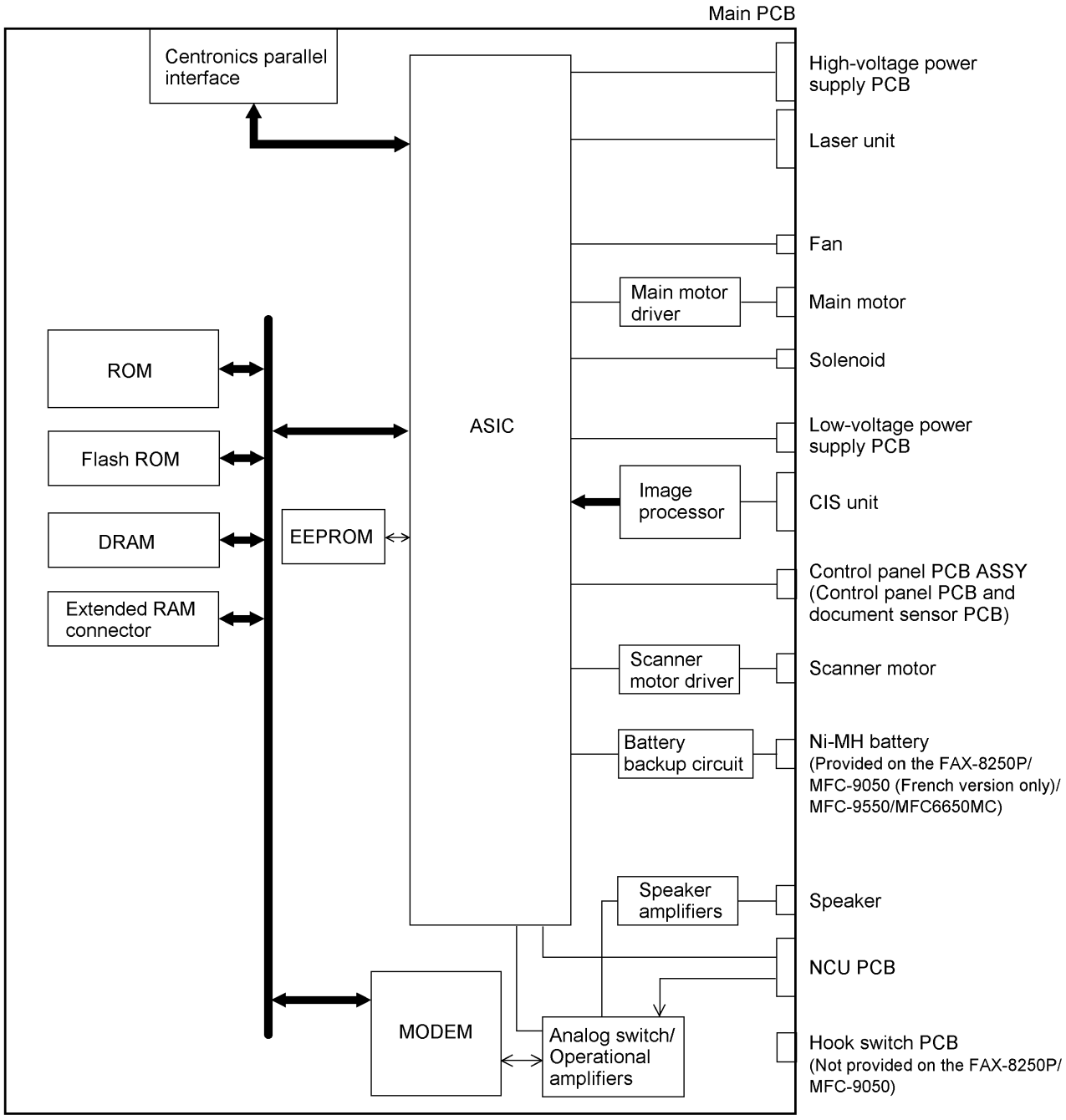
*4 On the high-voltage power supply PCB is the paper ejection sensor.

*5 On the hook switch PCB is the hook switch. (Not provided on the FAX-8250P/MFC-9050.)

Configuration of Facsimile Equipment

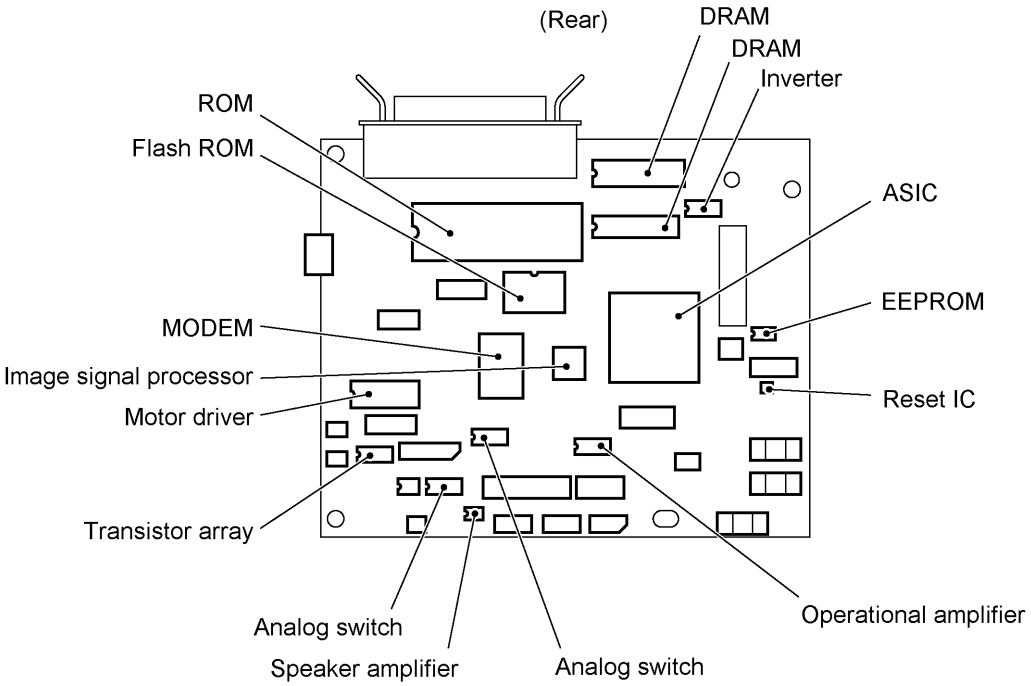
3.2 Main PCB

The main PCB, which is the nucleus controlling the entire operation of the equipment, consists of a FAX engine (ASIC), memories, MODEM, motor drive circuitry, sensor detection circuitry, and analog circuits for scanning, printing, and power transmission shifting.



EEPROM: Electrically Erasable Programmable Read-only Memory
DRAM: Dynamic Random Access Memory

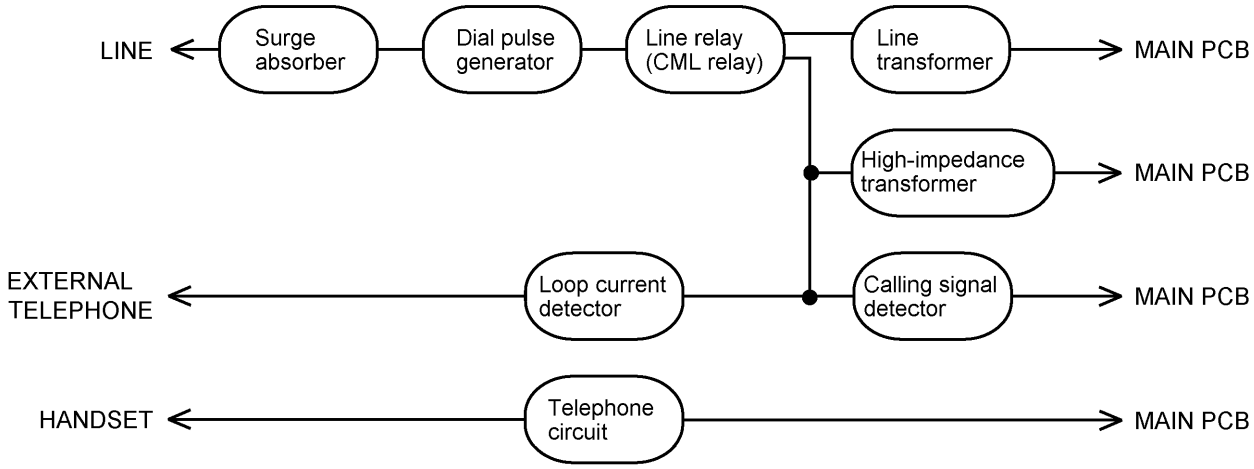
Block Diagram of Main PCB

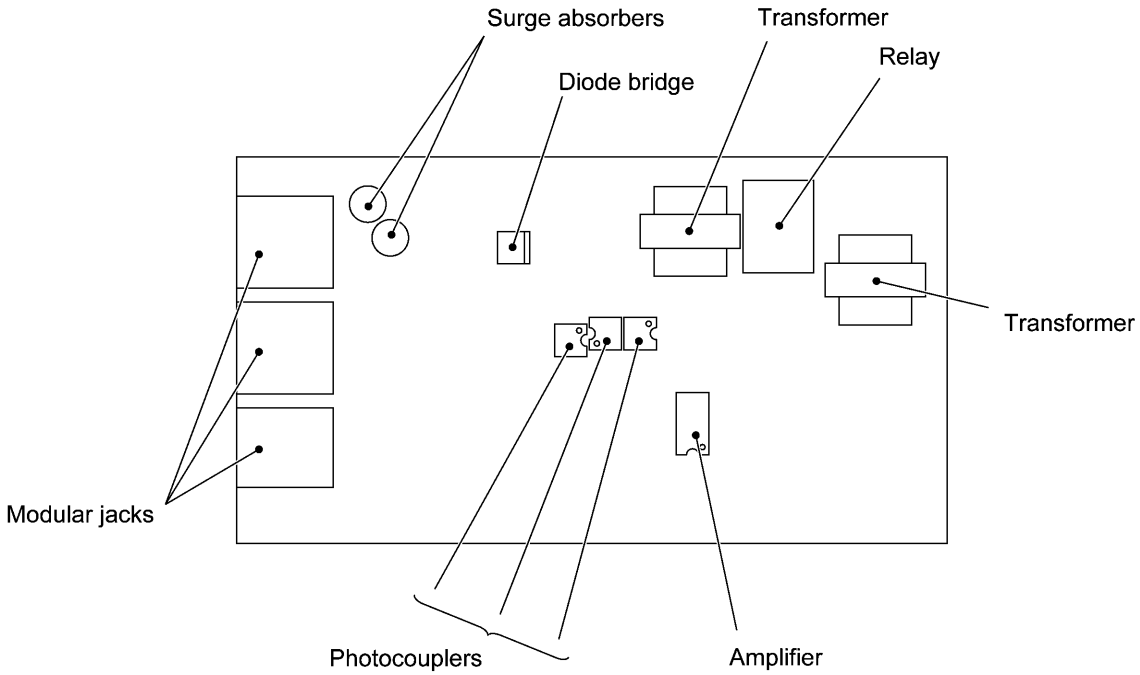

(Rear)
DRAM
DRAM
Inverter
ROM
Flash ROM
ASIC
EEPROM
MODEM
Image signal processor
Reset IC
Motor driver
Transistor array
Analog switch
Operational amplifier
Speaker amplifier
Analog switch

3.3 NCU PCB

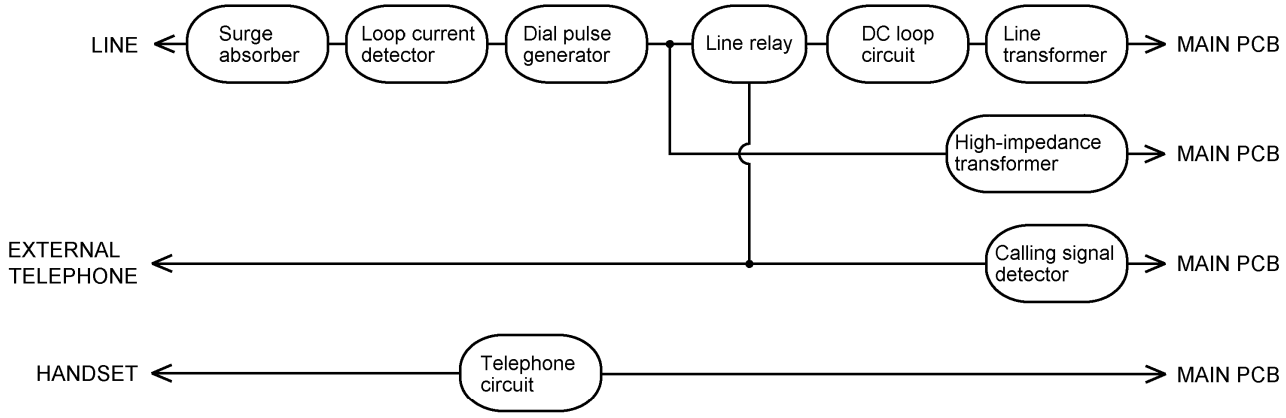
The NCU PCB switches the communications line to telephone or built-in MODEM, under the control of the main PCB.

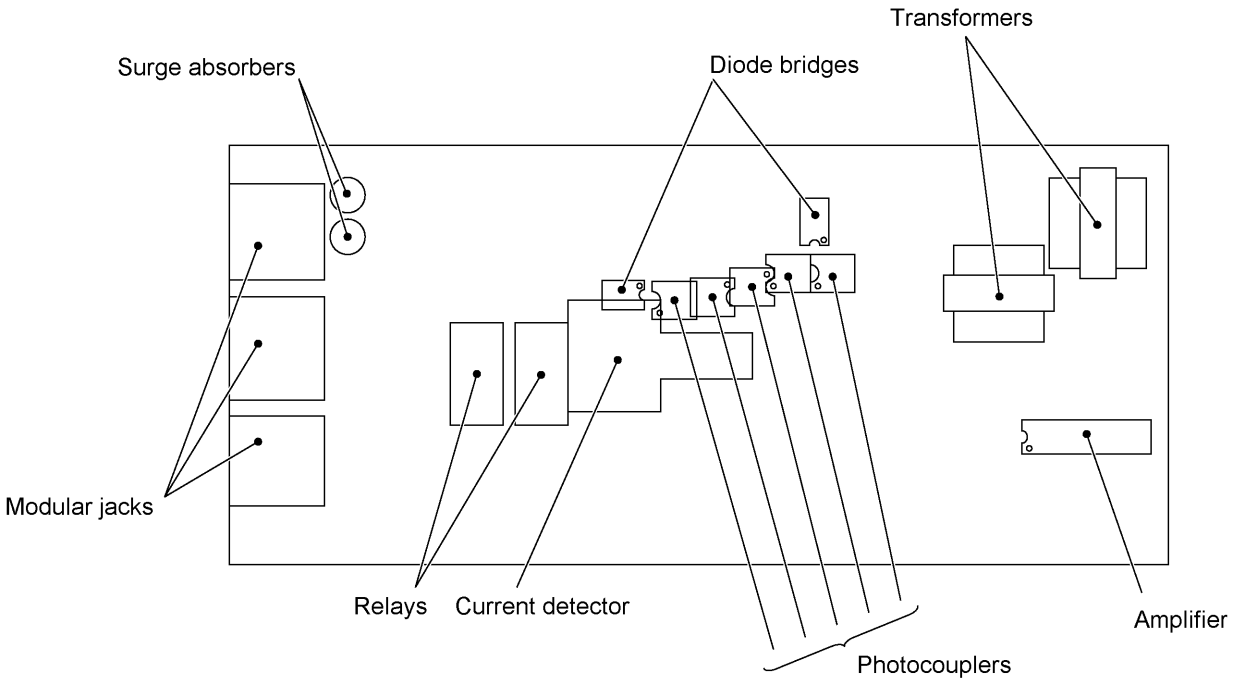
U.S.A. versions





European versions



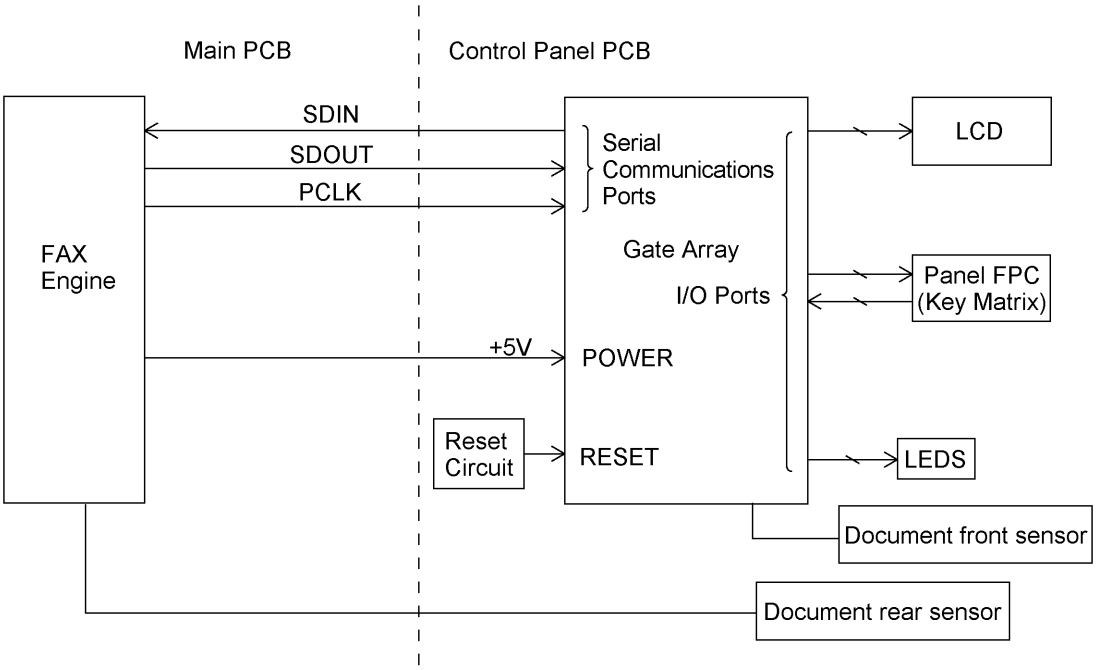


3.4 Control Panel PCB

The control panel PCB and the main PCB communicate with each other by serially transmitting commands and data.

The control panel unit consists of a gate array, an LCD and LEDs, which are controlled by the gate array according to commands issued from the FAX engine on the main PCB.

The panel FPC is a flexible keyboard PCB which integrates the key matrix having rubber keytops.



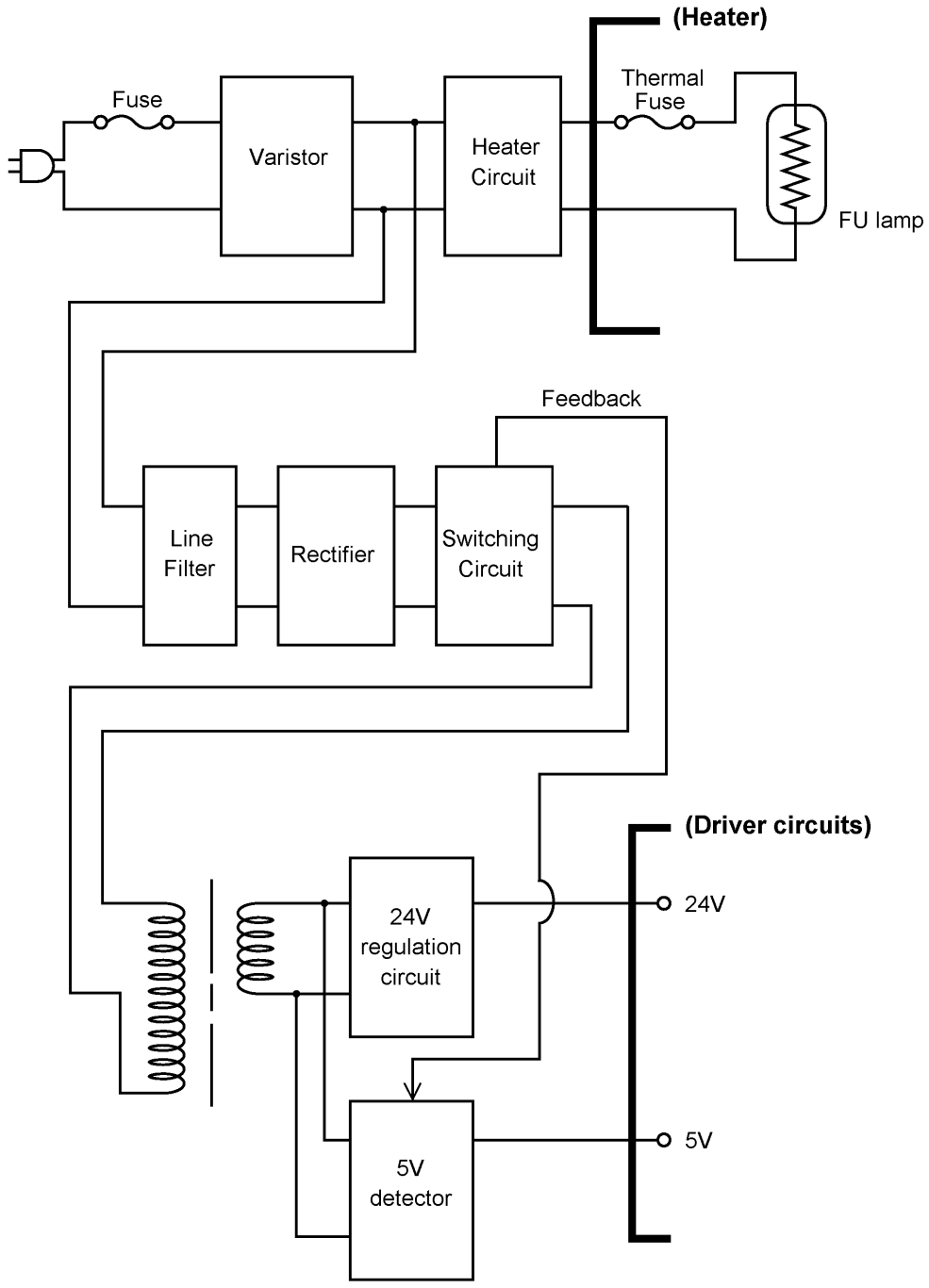
Control Panel PCB and its Related Circuit

3.5 Power Supply PCB

[1] Low-voltage power supply PCB

The low-voltage power supply uses the switching regulation system to generate DC power (+5V and +24V) from a commercial AC power supply for the driver circuits. The +5V source is fed to the logic, control panel, sensors, CIS unit, etc. The 24V source is fed to the motors, solenoid, fan, and high-voltage power supply PCB.

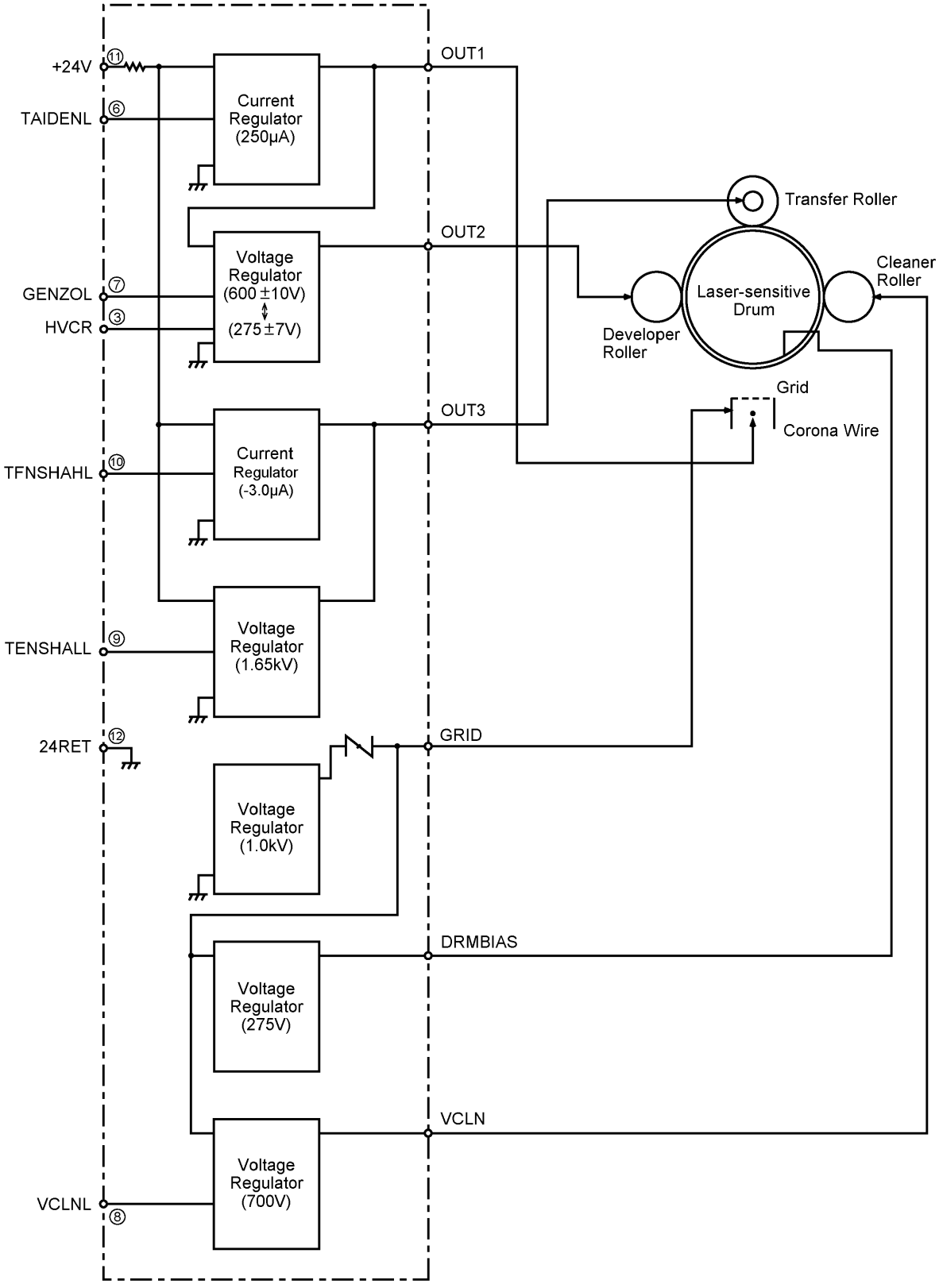
The low-voltage power supply also feeds AC power to the heater of the heat-fixing unit.



Low-voltage Power Supply Circuit

[2] High-voltage power supply PCB

This power supply generates high-voltage power sources from the 24V source fed from the low-voltage power supply for charging, developing, and transferring in the laser printing process.



High-voltage Power Supply Circuit

CHAPTER IV.

DISASSEMBLY/REASSEMBLY AND LUBRICATION

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2. LUBRICATION..... IV-45

[1] Document feed roller ASSY and document ejection roller ASSY..... IV-45

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[5] Gear drive unit..... IV-47

1. DISASSEMBLY/REASSEMBLY

n Safety Precautions

To prevent the creation of secondary problems by mishandling, observe the following precautions during maintenance work.

(1) Unplug the power cord from the power outlet before replacing parts or units. When having access to the power supply, be sure to unplug the power cord from the power outlet.

(2) When servicing the optical system of the laser printing unit, be careful not to place screwdrivers or other reflective objects in the path of the laser beam. Be sure to take off any personal accessories such as wrist watches and rings before working on the printer. A reflected beam, though invisible, can permanently damage your eyes.

(3) If the equipment has been printing, allow the heat-fixing unit sufficient time to cool down before starting maintenance jobs. It is HOT!

(4) Be careful not to lose screws, washers, or other parts removed for parts replacement.

(5) Do not remove gears from the document LF roller ASSY or ejection roller ASSY if at all possible. Once removed, they will become unusable and new gears will have to be put back in.

(6) When using soldering irons and other heat-generating tools, take care not to damage the resin parts such as wires, PCBs, and covers.

(7) Before handling the PCBs, touch a metal portion of the equipment to discharge static electricity; otherwise, the electronic parts may be damaged due to the electricity charged in your body.

(8) When transporting PCBs, be sure to wrap them in conductive sheets such as aluminum foil.

WARNING

For the FAX-8250P/MFC-9050 (French version only)/MFC-9550/MFC6650MC which has a Ni-MH battery on the main PCB, be sure to remove that battery before transporting the PCB (in aluminum foil). Failure to do so may result in a short circuit, overcurrent flow, or fire.

(9) Be sure to reinsert self-tapping screws correctly, if removed.

(10) Tighten screws to the torque values listed on the next page.

(11) When connecting or disconnecting cable connectors, hold the connector bodies not the cables. If the connector has a lock, always slide the connector lock to unlock it.

(12) Before reassembly, apply the specified lubricant to the specified points. (Refer to Section 2 in this chapter.)

(13) After repairs, check not only the repaired portion but also that the connectors and other related portions function properly before operation checks.

Tightening Torque List

Location	Screw type	Q'ty	Tightening torque (kg•cm)	Loosening torque (kg•cm)
Option cover	Screw, pan (washer) M3x8DB	2	4 ±1	2 to 6
ADF parts	Taptite, pan (washer) B M3x6	1	4 ±1	2 to 6
Panel rear cover	Taptite, cup B M3x8	2	6 ±1	2 to 6
Scanner frame ASSY	Taptite, cup B M3x10	2	9 ±2	2 to 6
Scanner motor	Screw, pan (washer) M3x6DA	1	7 ±2	Min. 2
Scanner grounding leaf spring	Taptite, cup S M3x6	1	7 ±2	Min. 2
CIS shield plate	Taptite, cup S M3x6	1	7 ±2	Min. 2
Pinch roller leaf spring	Taptite, cup B M3x8	1	8 ±2	Min. 2
Control panel locks	Taptite, cup B M3x8	2	8 ±2	Min. 2
Scanner drive unit	Taptite, cup B M3x8	1	8 ±2	Min. 2
	Taptite, cup B M3x10	1	8 ±2	Min. 2
Top cover stopper	Taptite, cup S M3x6	2	8 ±2	Min. 2
Hinges on top cover	Taptite, bind B M4x12	4	10 ±2	3 to 6
Hinges on main cover	Taptite, cup B M4x12	4	10 ±2	3 to 6
Handset mount	Taptite, cup B M3x10	2	8 ±2	2 to 6
Heat-fixing unit	Taptite, bind B M4x12	1	10 ±2	4 to 6
Laser unit	Taptite, bind B M4x12	3	8 ±2	3 to 6
Toner sensor PCB	Taptite, cup B M3x8	1	6 ±2	3 to 5
Bottom plate	Taptite, bind B M4x12	7	10 ±2	3 to 6
	Taptite, cup S M3x6	3	8 ±2	2 to 6
AC grounding wire	Screw, pan (washer) M4x8DB	1	6 ±2	2 to 9
Interface connector	Screw, pan M3x6	2	8 ±2	Min. 4
Low-voltage power supply PCB	Taptite, cup S M3x6	1	8 ±2	2 to 6
Main PCB	Taptite, bind B M4x12	1	10 ±2	2 to 6
High-voltage power supply PCB	Taptite, bind B M4x12	1	10 ±2	3 to 6
Gear drive unit	Taptite, cup B M4x20	3	12 ±2	3 to 6
Main motor	Taptite, cup S M3x8	2	8 ±2	Min. 4
NCU bracket	Taptite, bind B M4x12	1	10 ±2	3 to 6
NCU PCB	Taptite, cup S M3x6	1	8 ±2	2 to 6
Scanner grounding plate	Taptite, cup B M3x8	1	6 ±2	2 to 6

n Preparation

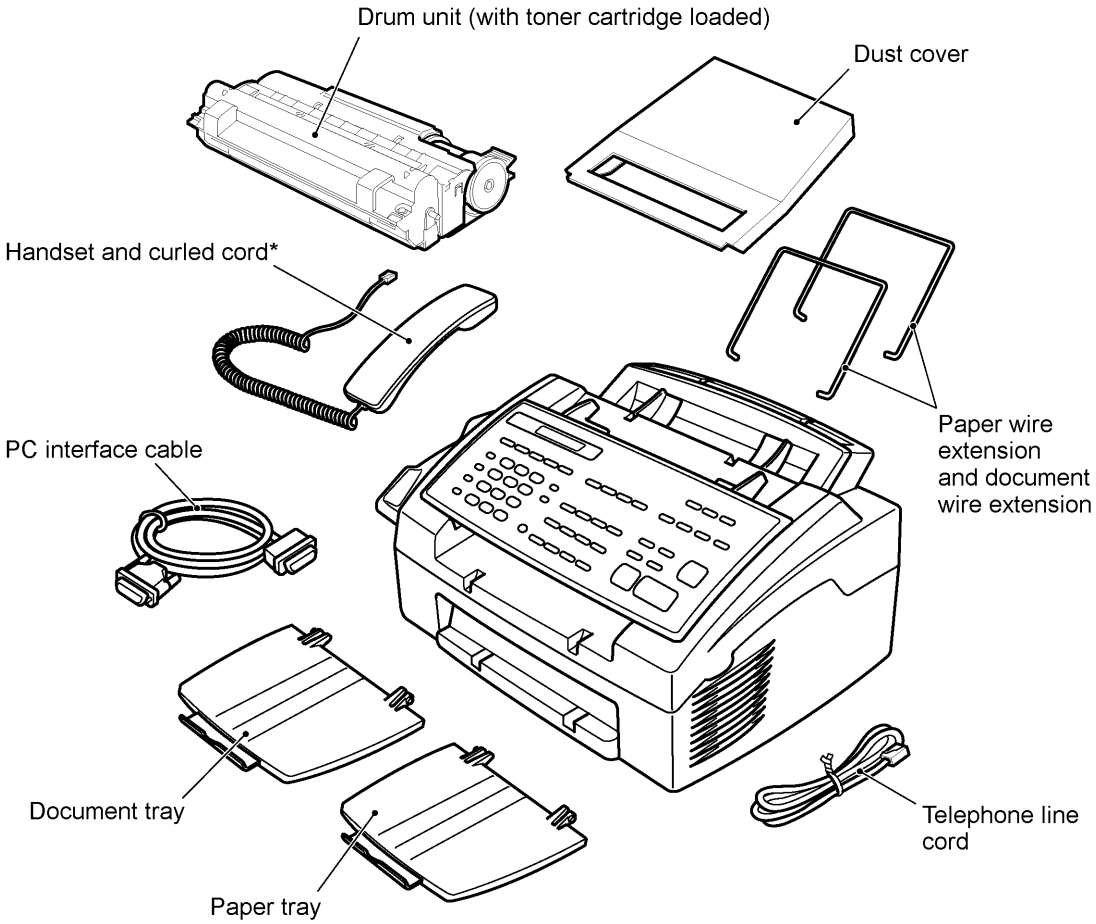
Prior to proceeding to the disassembly procedure,

(1) Unplug

- the modular jack of the telephone line,
- the modular jack of the curled cord (and remove the handset),
- the PC interface cable, and
- the modular jack of an external telephone set if connected. (Not shown below.)

(2) Remove

- the dust cover,
- the paper wire extension
- the document wire extension
- the document tray,
- the paper tray, and
- the drum unit (with the toner cartridge loaded)

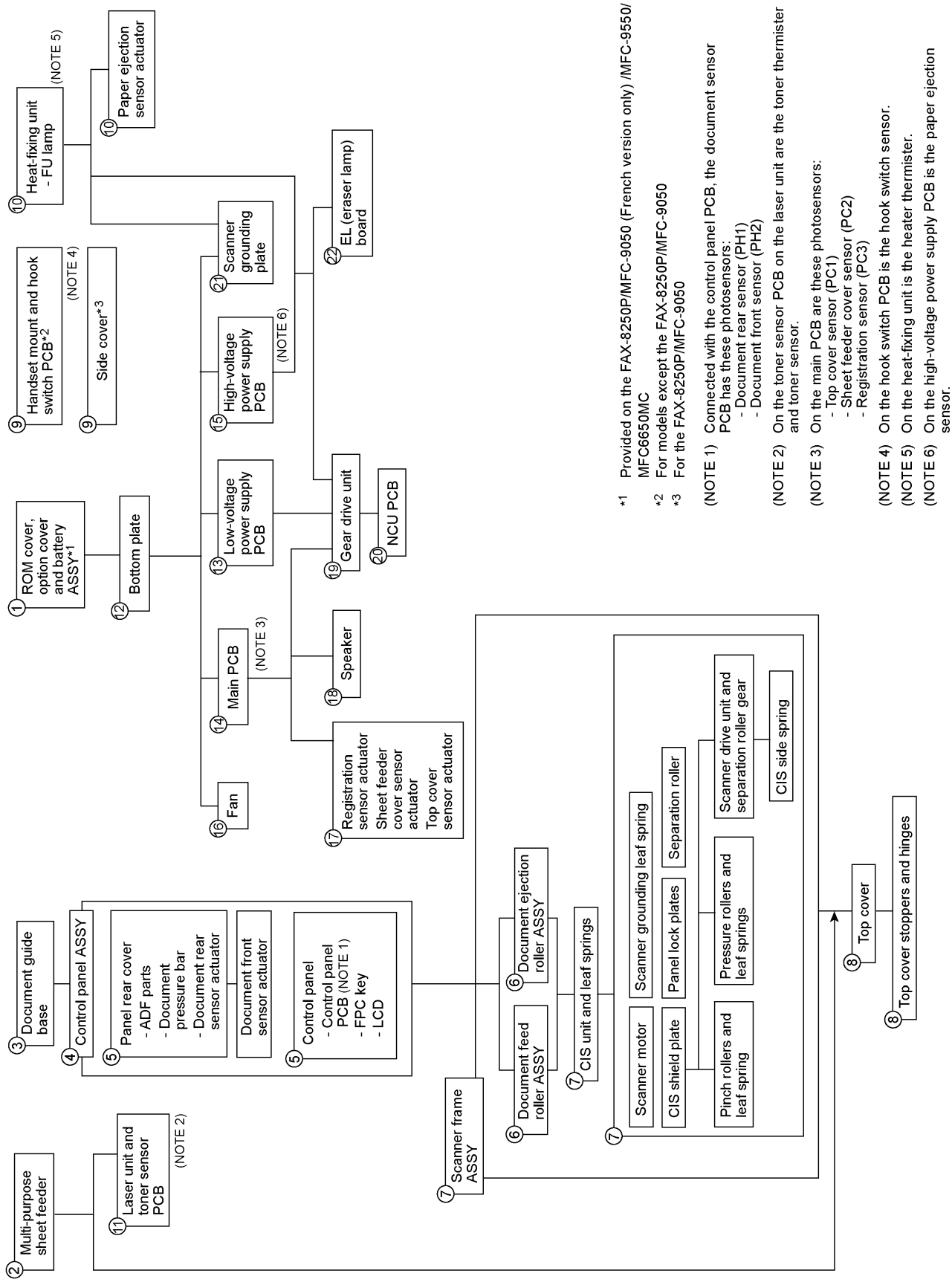


(*Not provided on the FAX-8250P/MFC-9050)

n How to Access the Object Component

- On the next page is a disassembly order flow which helps you access the object components. To remove the gear drive unit, for example, first find it on the flow and learn its number (⑲ in this case). You need to remove parts numbered ①, ⑩, ⑫, ⑬, ⑭, and ⑮ so as to access the gear drive unit.
- Unless otherwise specified, the disassembled parts or components should be reassembled in the reverse order of removal.

n Disassembly Order Flow


1 ROM cover, option cover and battery ASSY*1
2 Multi-purpose sheet feeder
3 Document guide base
4 Control panel ASSY
5 Panel rear cover
- ADF parts
- Document pressure bar
- Document rear sensor actuator
Document front sensor actuator
5 Control panel
- Control panel PCB (NOTE 1)
- FPC key
- LCD
6 Document feed roller ASSY
6 Document ejection roller ASSY
7 CIS unit and leaf springs
7 Scanner frame ASSY
7 Scanner motor
Scanner grounding leaf spring
CIS shield plate
Panel lock plates
Separation roller
Pinch rollers and leaf spring
Pressure rollers and leaf springs
Scanner drive unit and separation roller gear
CIS side spring
8 Top cover
8 Top cover stoppers and hinges
9 Handset mount and hook switch PCB*2
(NOTE 4)
9 Side cover*3
10 Heat-fixing unit - FU lamp
(NOTE 5)
10 Paper ejection sensor actuator
11 Laser unit and toner sensor PCB
(NOTE 2)
12 Bottom plate
13 Low-voltage power supply PCB
14 Main PCB
(NOTE 3)
15 High-voltage power supply PCB
(NOTE 6)
16 Fan
17 Registration sensor actuator
Sheet feeder cover sensor actuator
Top cover sensor actuator
18 Speaker
19 Gear drive unit
20 NCU PCB
21 Scanner grounding plate
22 EL (eraser lamp) board

*1 Provided on the FAX-8250P/MFC-9050 (French version only) /MFC-9550/ MFC6650MC

*2 For models except the FAX-8250P/MFC-9050

*3 For the FAX-8250P/MFC-9050

(NOTE 1) Connected with the control panel PCB, the document sensor PCB has these photosensors:
- Document rear sensor (PH1)
- Document front sensor (PH2)

(NOTE 2) On the toner sensor PCB on the laser unit are the toner thermister and toner sensor.

(NOTE 3) On the main PCB are these photosensors:
- Top cover sensor (PC1)
- Sheet feeder cover sensor (PC2)
- Registration sensor (PC3)

(NOTE 4) On the hook switch PCB is the hook switch sensor.

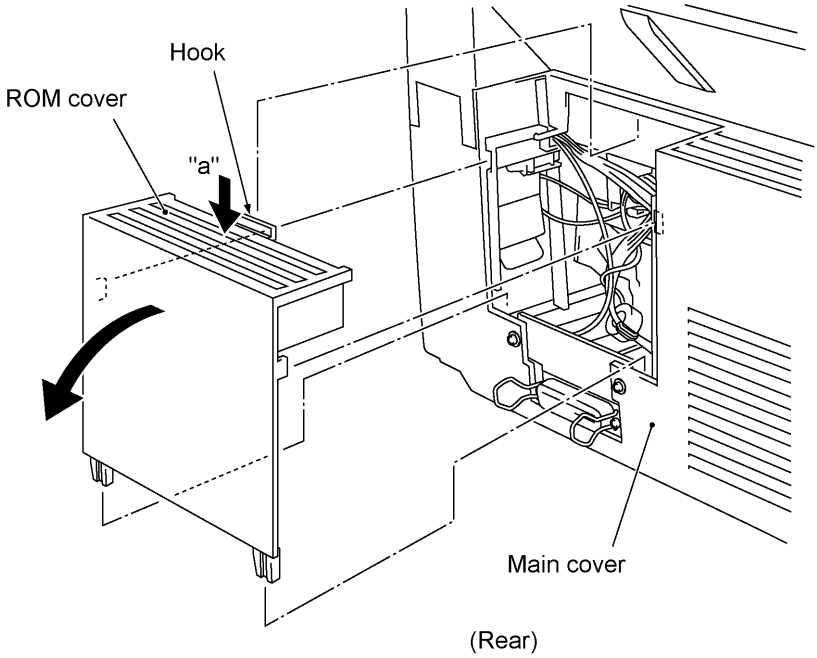
(NOTE 5) On the heat-fixing unit is the heater thermister.

(NOTE 6) On the high-voltage power supply PCB is the paper ejection sensor.

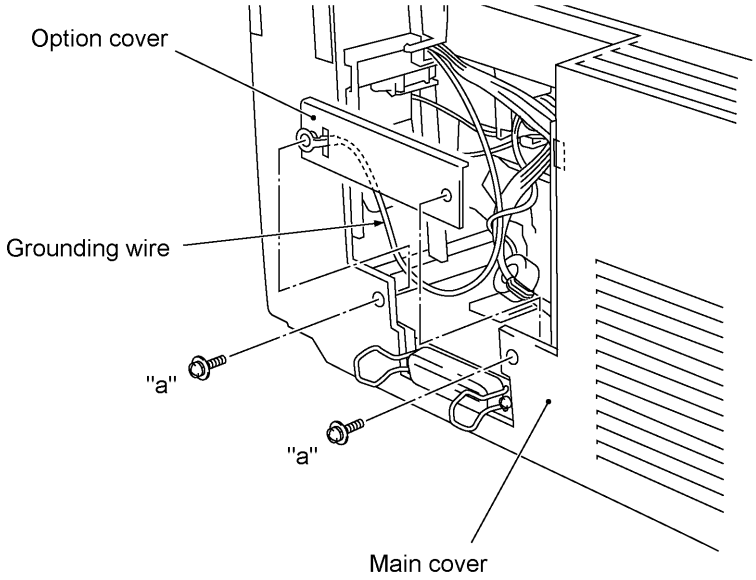
1.1 ROM Cover, Option Cover, and Battery ASSY*

(*Provided on the FAX-8250P/MFC-9050 (French version only)/MFC-9550/MFC6650MC)

(1) As shown below, push down section "a" of the ROM cover and tilt it to the rear.



(2) Take off the option cover from the rear of the main cover by removing two screws "a." The grounding wire also comes free.

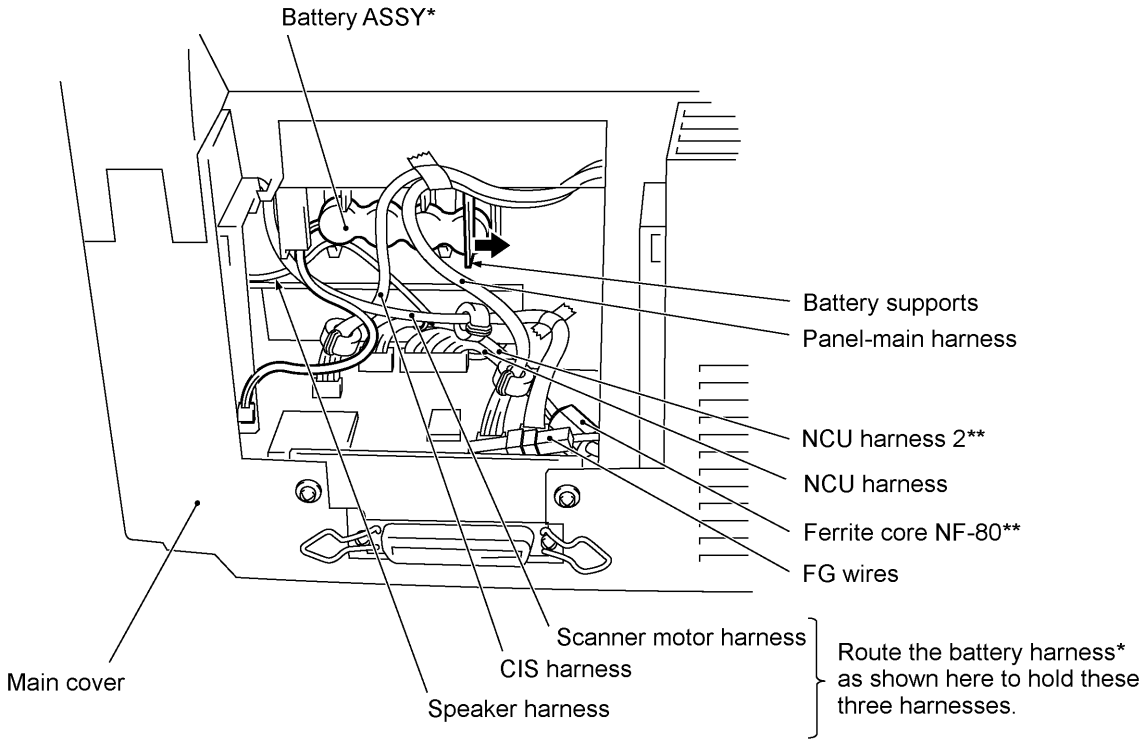


"a": Screw, pan (washer) M3x8DB

(3) FAX-8250P/MFC-9050 (French version only)/MFC-9550/MFC6650MC: To replace the battery ASSY (Ni-MH battery), plug the power cord of the facsimile equipment into a power outlet, disconnect the battery harness from the main PCB, and take out the battery ASSY while pulling the battery support of the main cover in the direction of the arrow. Set a new battery ASSY, connect the battery harness to the main PCB, and then unplug the power cord.

Disconnecting the battery harness with the power cord unplugged will lose the settings (e.g., calendar clock, voice messages, and received FAX data) stored in the RAM.

If you do not need to replace the battery ASSY but you will remove the main PCB in the following procedures, take out the battery ASSY from its supports and put it on the main PCB with the battery harness being connected.



(*Provided on the FAX-8250P/MFC-9050 (French version only)/ MFC-9550/MFC6650MC)

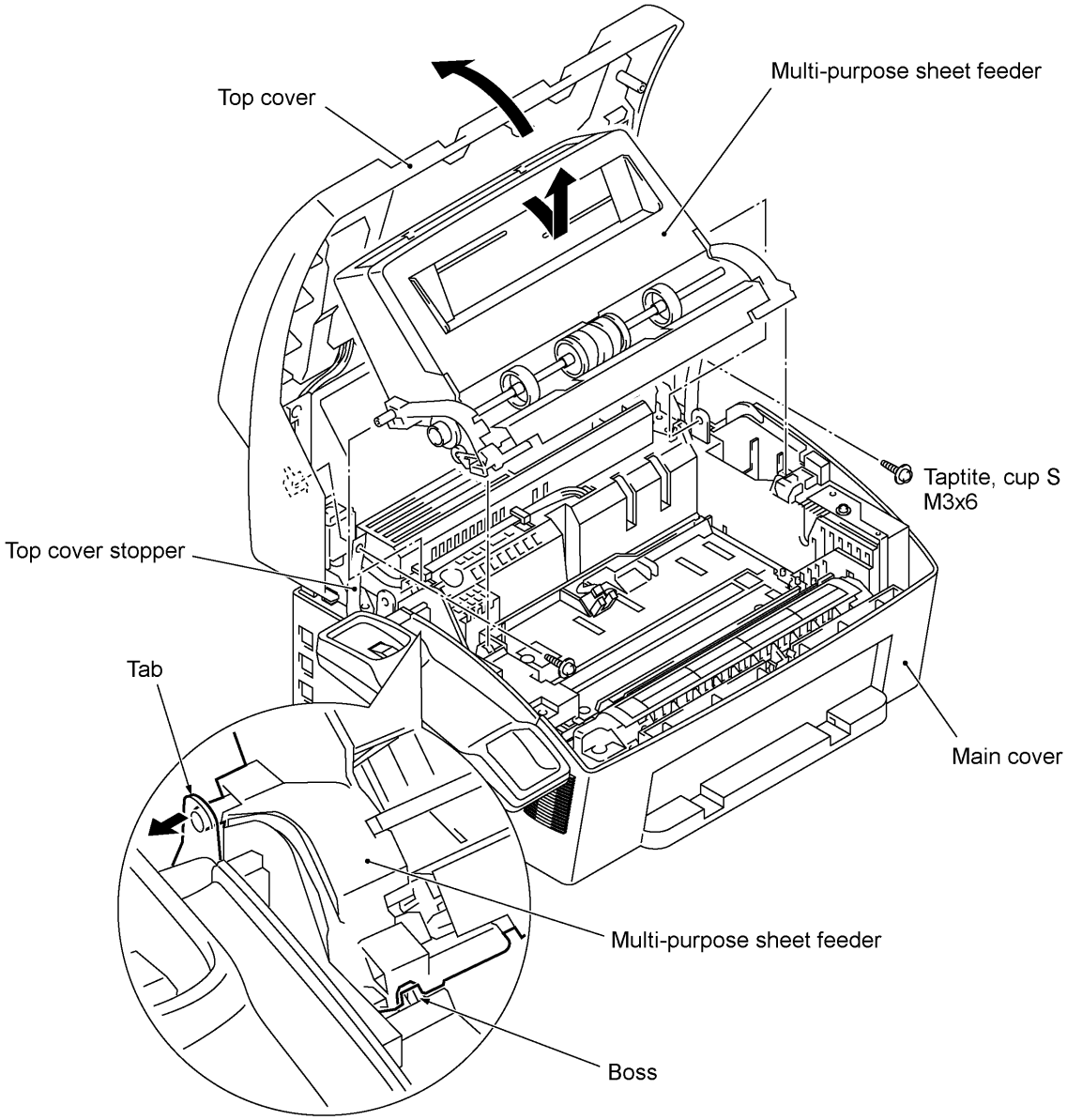
(** Provided on the European, Australian, Indonesian, and Asian versions)

1.2 Multi-purpose Sheet Feeder

(1) Open the top cover.

(2) Remove one of two screws from each of right and left top cover stoppers, and then fully open the top cover.

(3) Pull either one of the right and left tabs provided on the main cover outwards and slightly lift up the multi-purpose sheet feeder, then release the other end of the sheet feeder also.



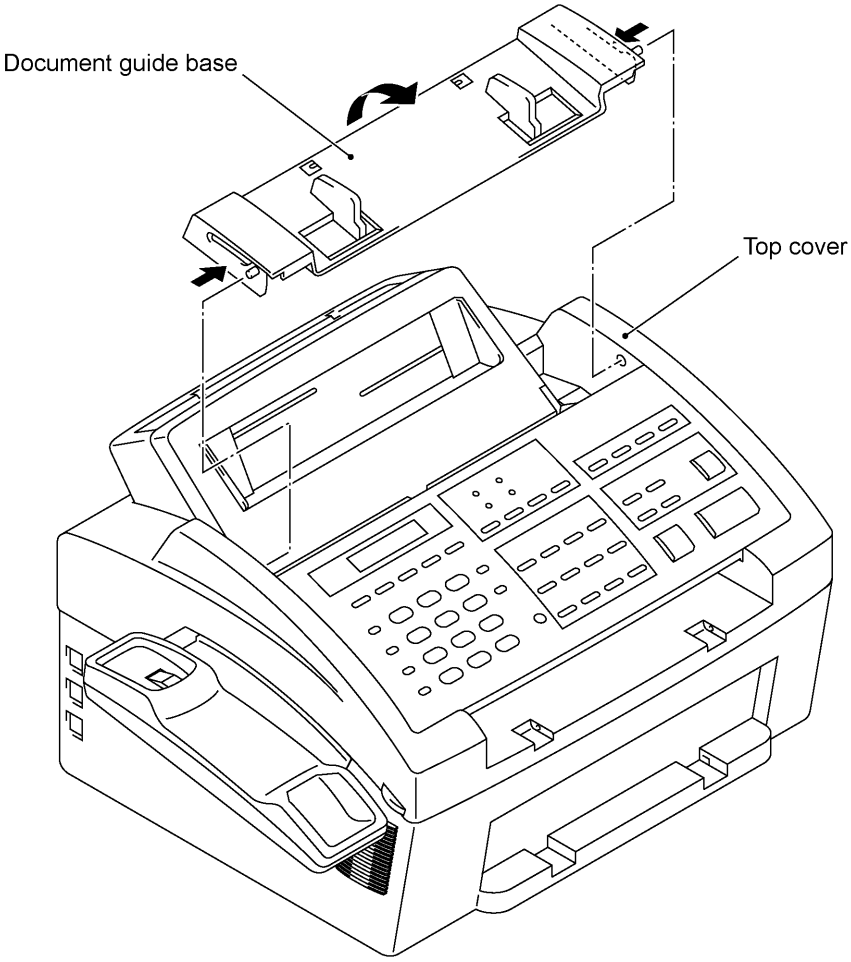
n Reassembling Notes

- When reinstalling the multi-purpose sheet feeder, fit the front end over the bosses provided on the main cover and then push down the rear end.

1.3 Document Guide Base

(1) Turn up the document guide base towards you.

(2) Push the right or left end of the document guide base inwards and take it off.

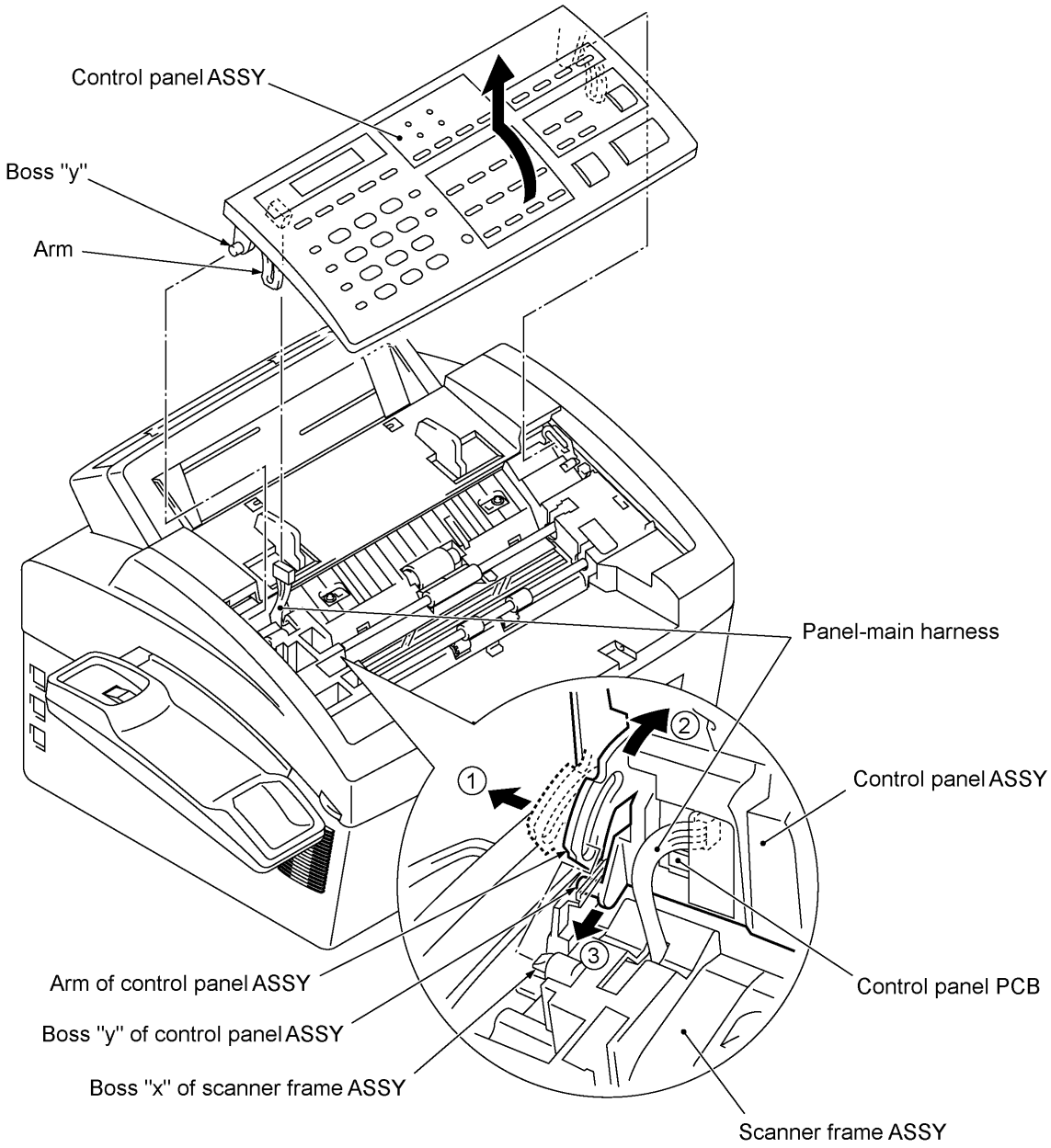


1.4 Control Panel ASSY

(1) Slightly open the control panel ASSY.

(2) Push the right and left arms of the control panel ASSY outwards (in the direction of arrow) with your thumbs and open the control panel ASSY further (arrow) to unhook those arms from bosses “x” provided on the scanner frame ASSY. Then slide the control panel ASSY to the front (arrow) to release its bosses “y” from the grooves of the scanner frame ASSY.

(3) Slightly lift up the control panel ASSY and disconnect the panel-main harness from the control panel PCB.



1.5 Panel Rear Cover and Control Panel

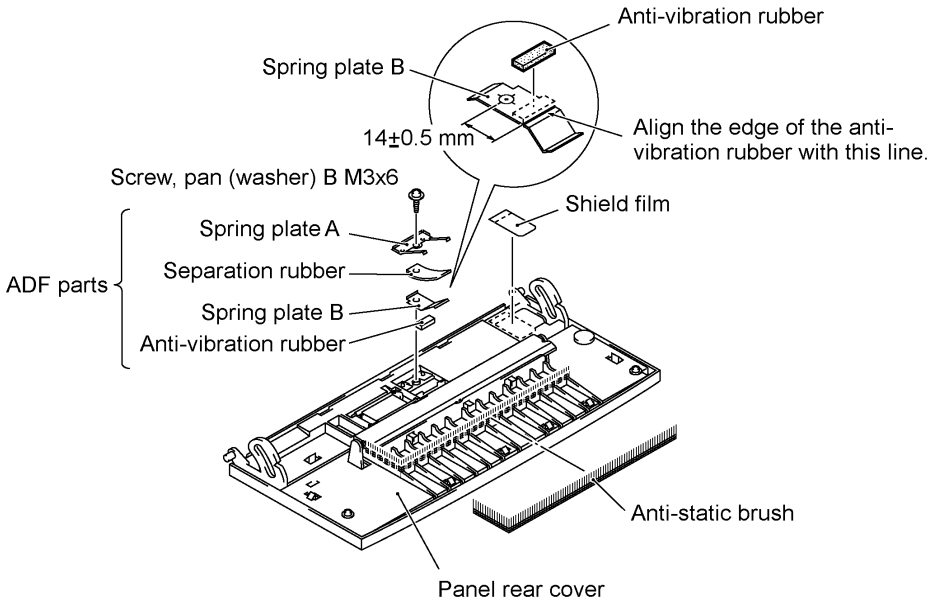
(1) Place the control panel ASSY upside down.

If you do not need to remove the ADF parts, anti-static brush, shield film, document pressure bar, or document rear sensor actuator, skip to step (6).

(2) To remove the ADF parts (spring plates, separation rubber and anti-vibration rubber), remove the screw.

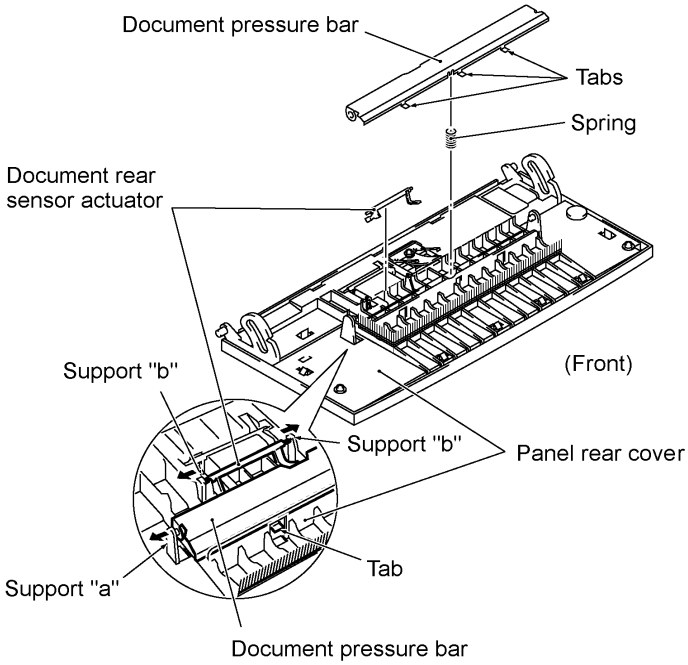
(3) To replace the anti-static brush and shield film, remove them.

NOTE: Once removed, the anti-static brush and shield film will become unusable and new parts will have to be put back in.



(4) To remove the document pressure bar, pull either of supports "a" provided on the panel rear cover outwards and then lift the pressure bar up and towards the rear to release the three tabs from the cutouts provided in the panel rear cover. The spring also comes off.

(5) To remove the document rear sensor actuator, pull either of supports "b" on the panel rear cover outwards.



(6) Remove the two screws from the panel rear cover.

(7) Unhook the panel rear cover from eight "X" latches provided on the control panel and lift up the panel rear cover.

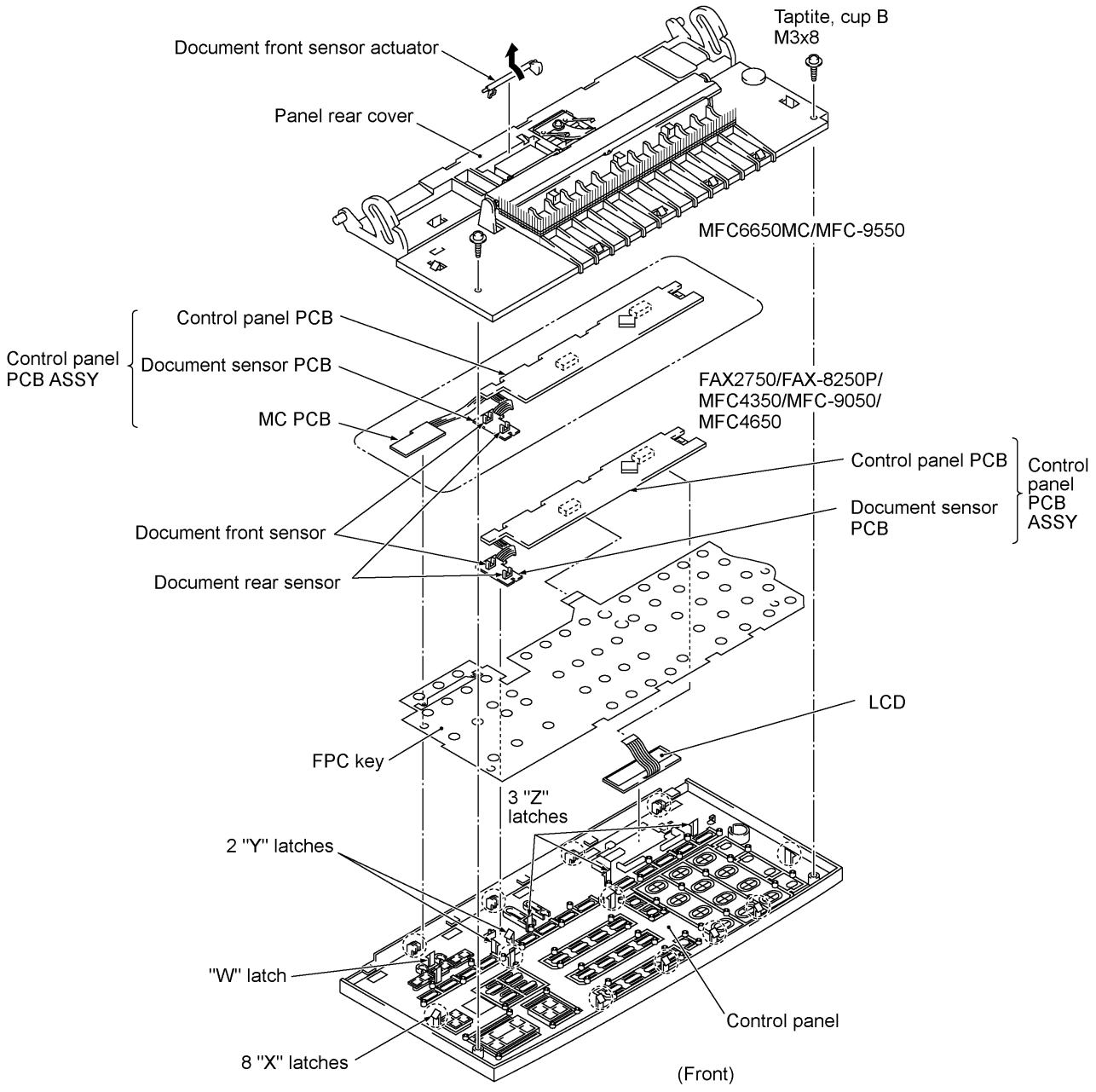
(8) Fully turn the document front sensor actuator to the rear and lift it up.

(9) Unhook the document sensor PCB from two "Y" latches.

(10) FAX2750/MFC-8250P/MFC4350/MFC-9050/MFC4650: Unhook the control panel PCB from three "Z" latches.

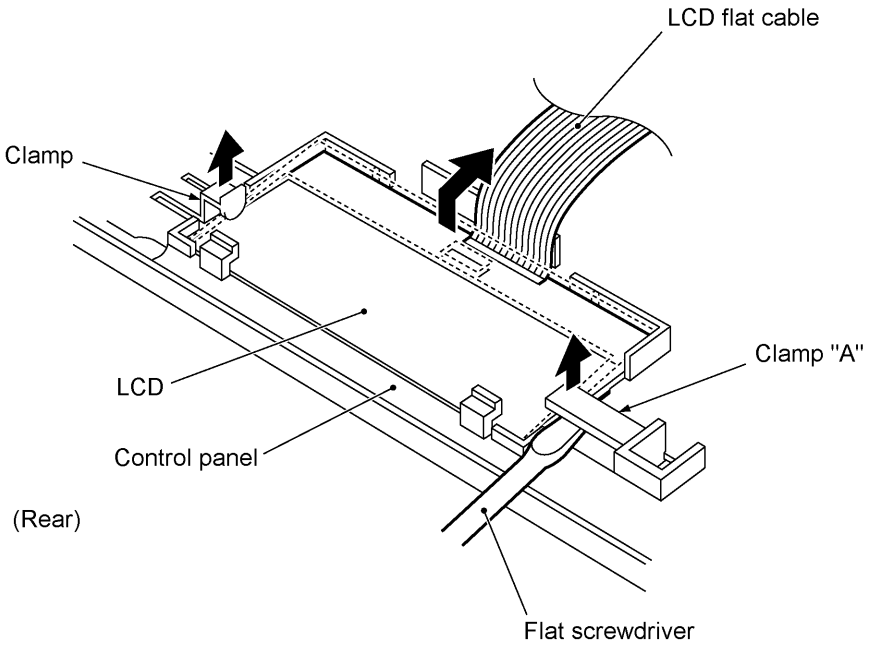
MFC6650MC/MFC-9550: Unhook the MC PCB from "W" latch and then unhook the control panel PCB from three "Z" latches.

(11) Slightly lift up the control panel PCB, then unlock the LCD cable connector and disconnect the LCD flat cable. Next, unlock the FPC key connector and disconnect the FPC key.



(12) As shown below, insert the tip of a flat screwdriver under clamp "A" from the rear and push up clamp "A" slightly to release the LCD, and then take out the LCD while pulling the LCD flat cable gently.

NOTE: Do not take out the LCD except when the LCD is defective and requires replacement.



Reassembling Notes

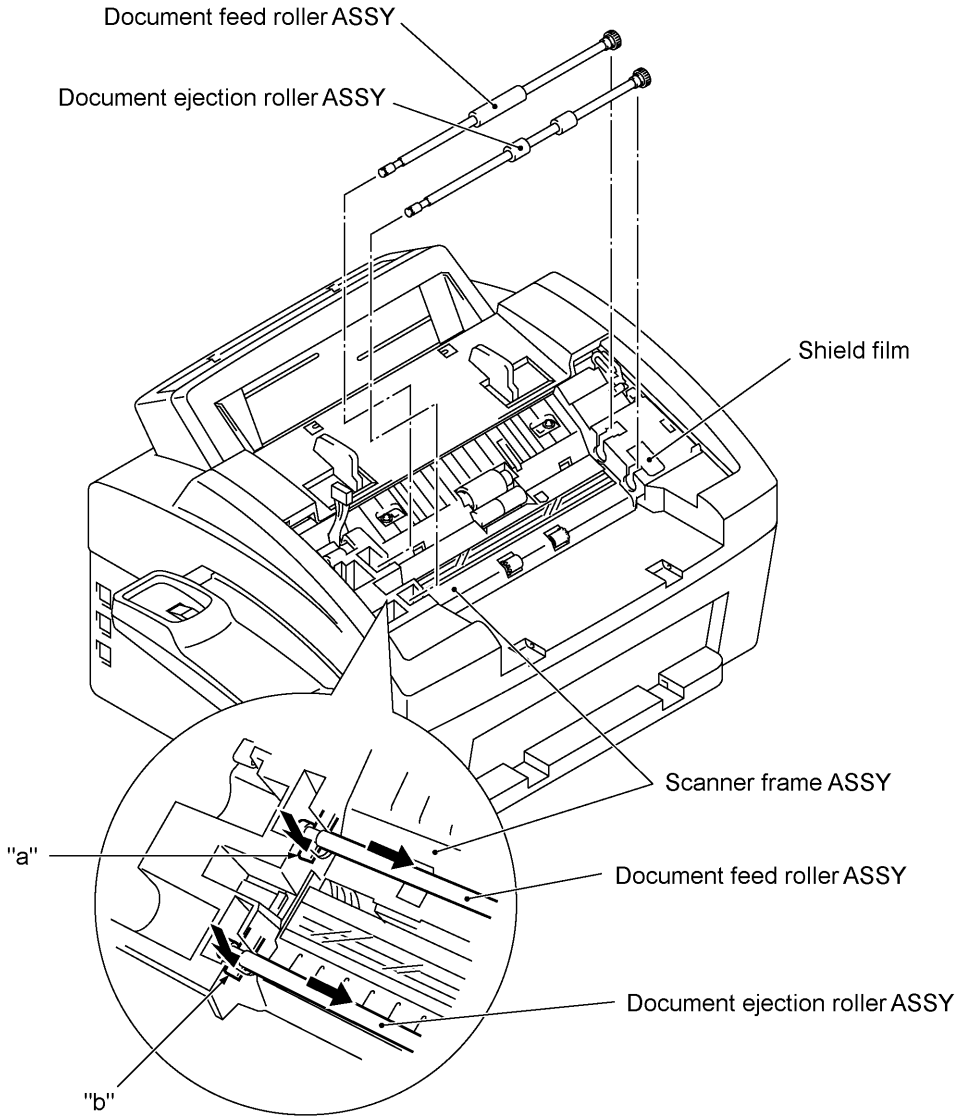
- Before reinstalling the LCD to the control panel, wipe fingerprints or dust off the LCD surface and control panel window with a soft cloth.
- A new LCD is covered with a protection sheet. Before installing it, remove the protection sheet.
- To put the LCD back into place, insert the tip of a flat screwdriver under clamp "A" from the rear, push up clamp "A" slightly, and then push the LCD to the rear with your thumbs.

1.6 Document Feed Roller ASSY and Document Ejection Roller ASSY

(1) Lightly push down arm rib "a" and shift the document feed roller ASSY to the right and upwards.

(2) Lightly push down arm rib "b" and shift the document ejection roller ASSY to the right and upwards, without removing the shield film.

NOTE: Take care not to break the arm ribs. They may easily break.



Reassembling Notes

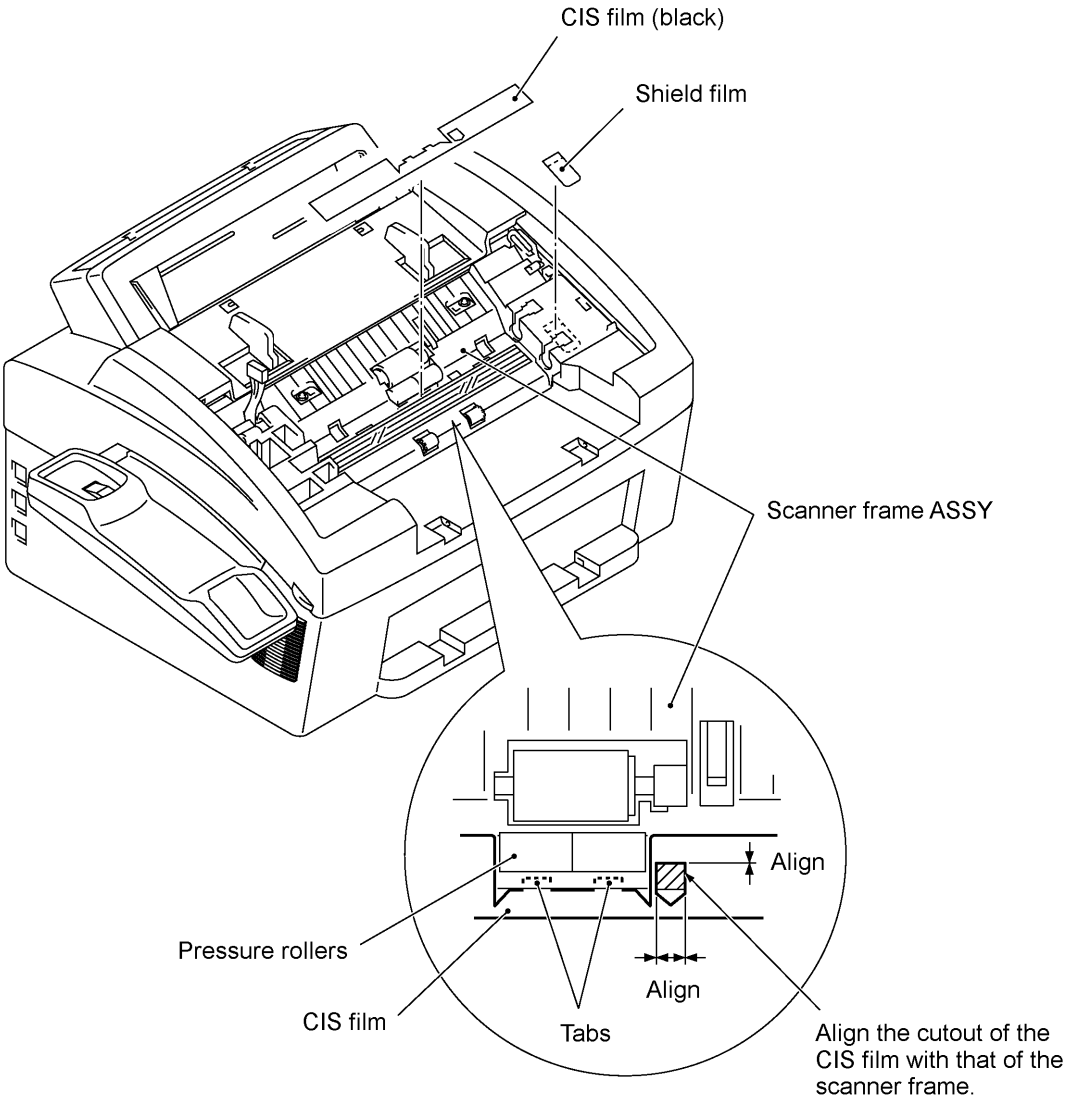
- Make sure that the shield film is on the document ejection roller gear and not bent down by that gear.
- Once removed, the shield film will become unusable and new one will have to be put back in.

1.7 Scanner Frame ASSY

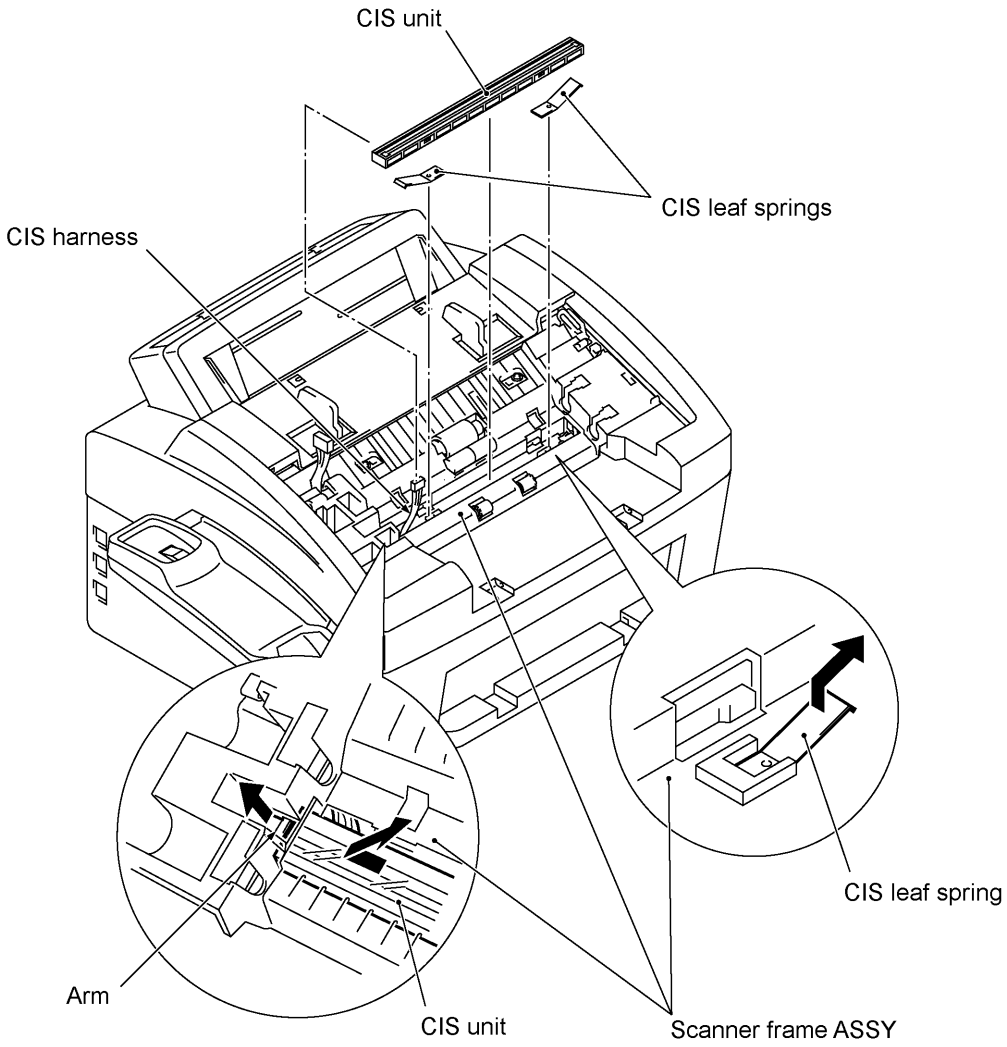
(1) You can remove the following parts from the top of the scanner frame ASSY without taking out the ASSY from the top cover.

- CIS film
- Shield film
- CIS unit (shown on the next page). Lightly pull up the arm, move the CIS unit to the left, and lift up the right edge of the CIS unit. While holding up the CIS unit, disconnect the CIS harness.
- CIS leaf springs (shown on the next page)

NOTE: Once removed, the CIS film and shield film will become unusable and new ones will have to be put back in.

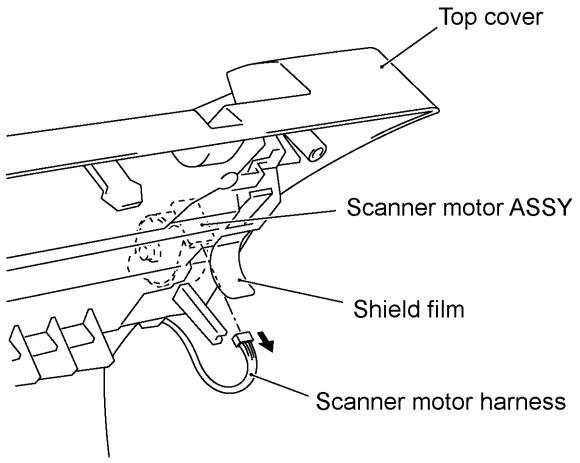


Attaching the CIS film



(2) Open the top cover.

(3) Disconnect the scanner motor harness from the scanner motor ASSY without removing the shield film.

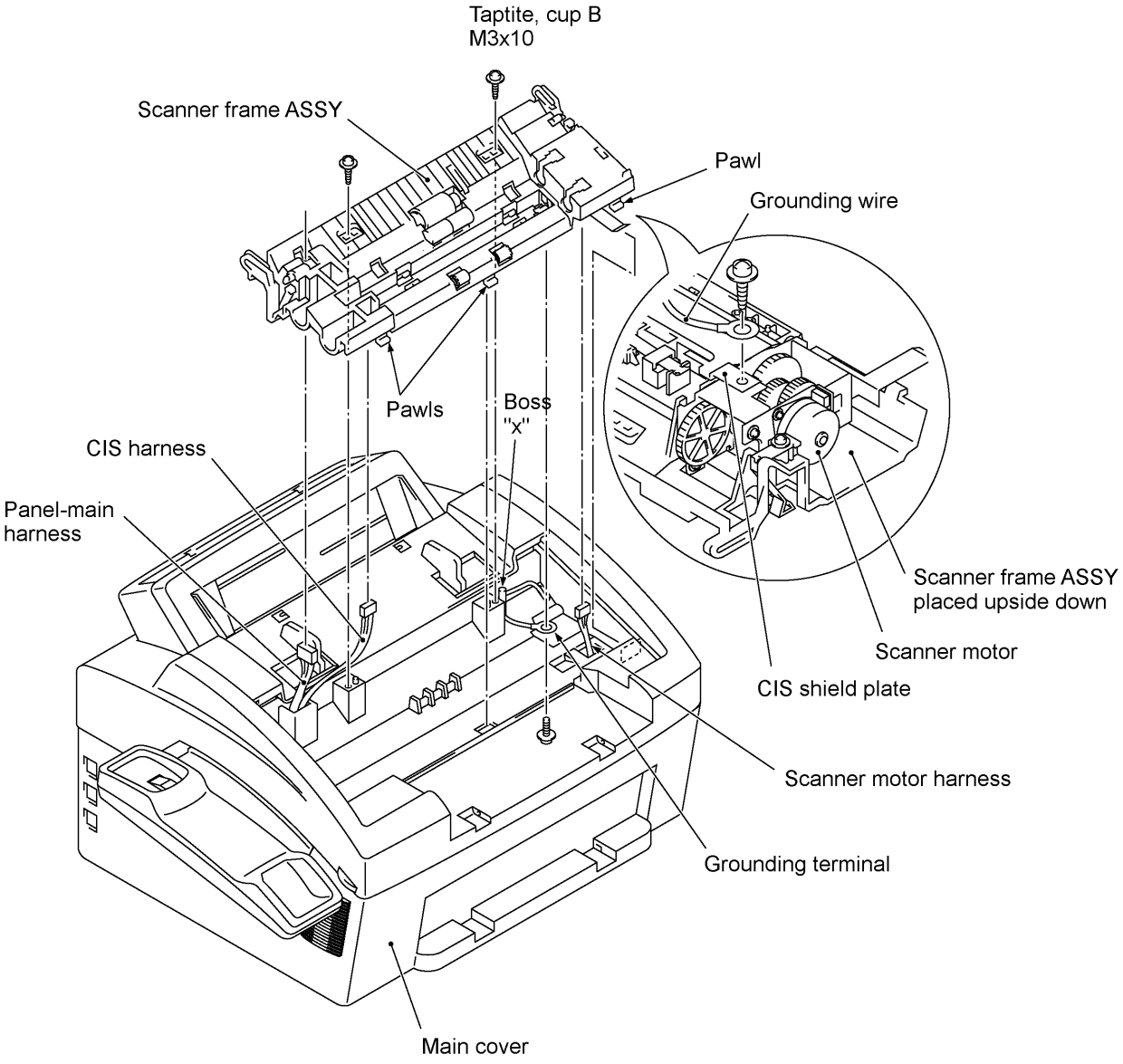


(4) Close the top cover.

(5) Remove the two screws from the scanner frame ASSY.

(6) Lift up the rear edge of the scanner frame ASSY to release the three pawls provided on the front end from the top cover, then hold up the ASSY and disconnect the CIS harness (if the CIS is mounted).

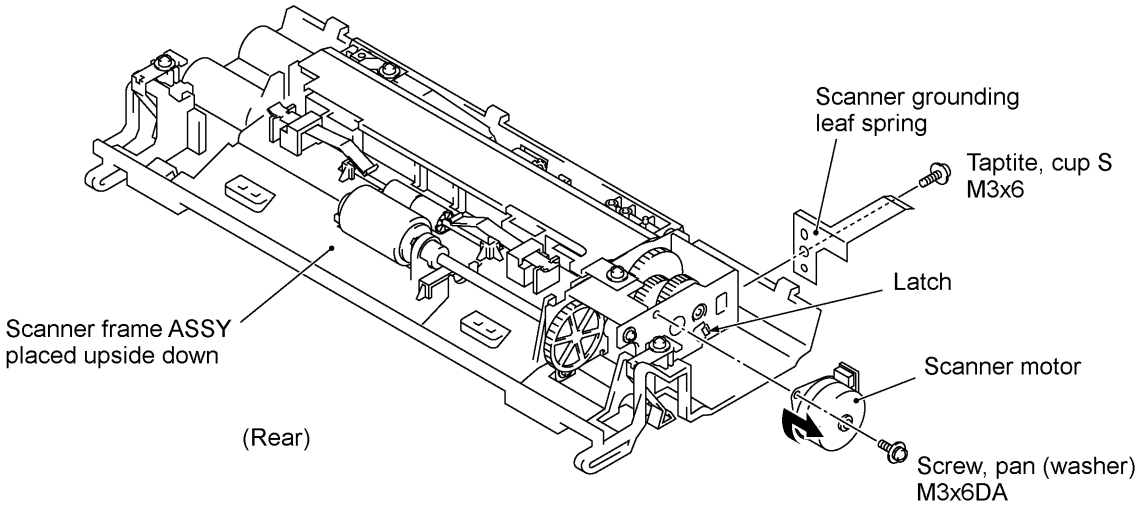
(7) Take off the grounding terminal by removing the screw.



(8) Turn the scanner frame ASSY upside down.

(9) Remove the screw from the scanner motor and turn the motor clockwise to release from the latch.

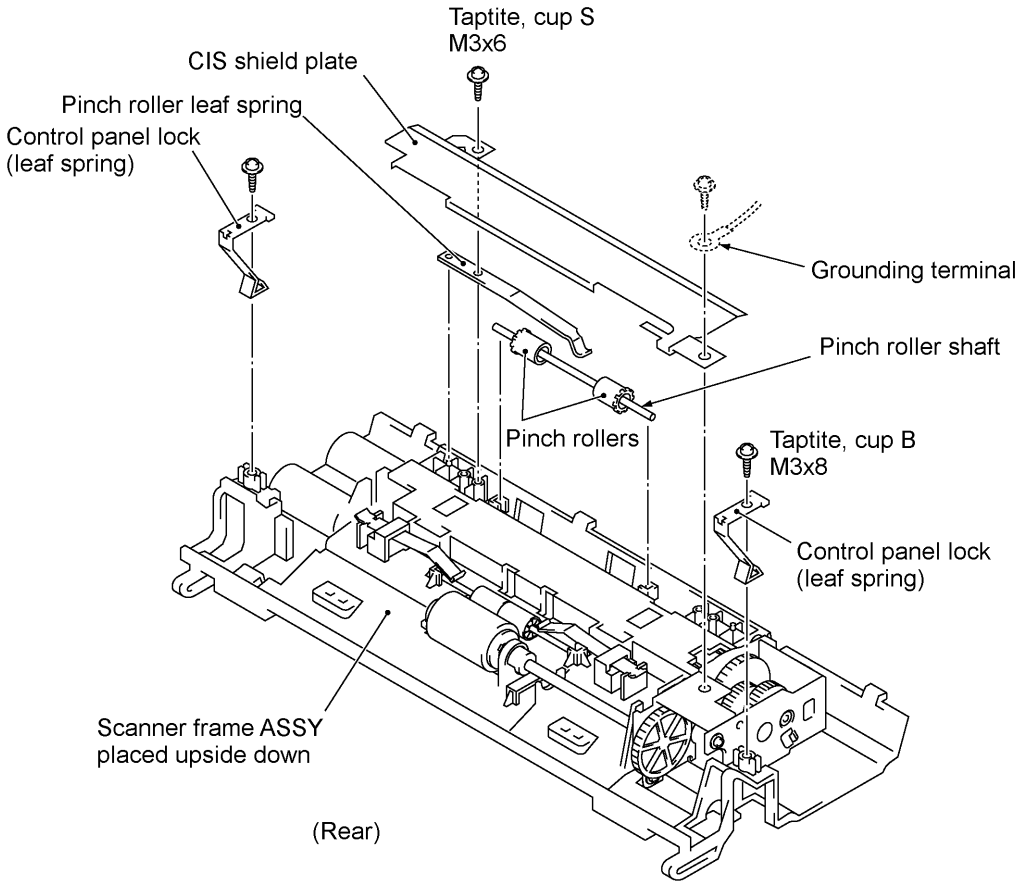
(10) Take off the scanner grounding leaf spring by removing the screw.



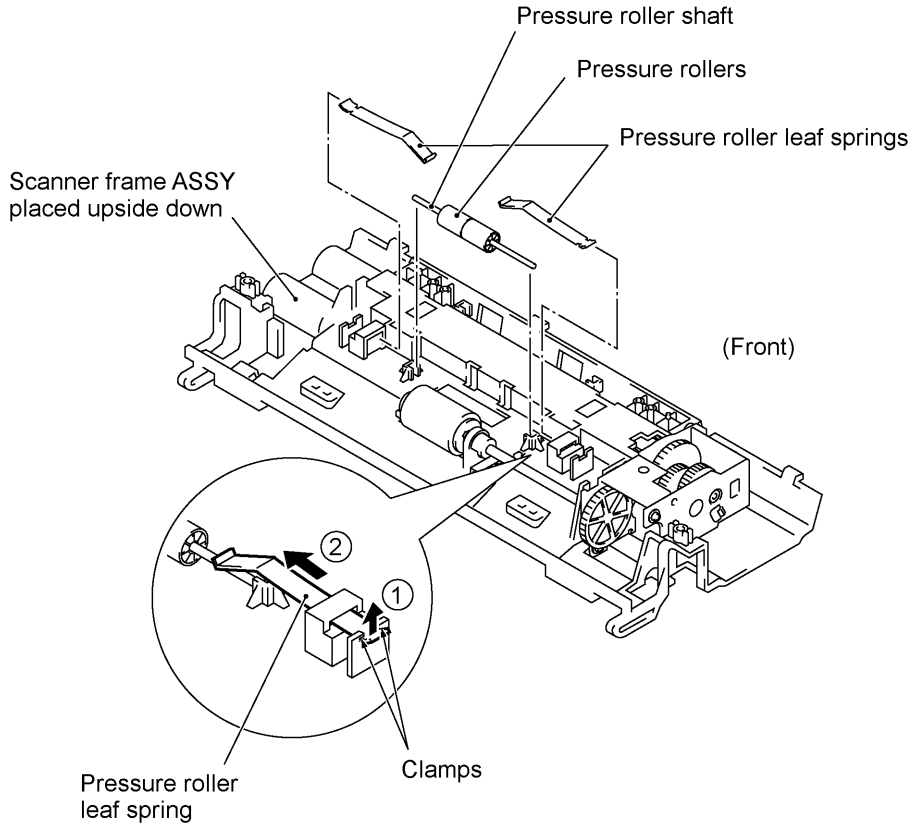
(11) Take off the CIS shield plate by removing the screw.

(12) Remove the pinch roller leaf spring, pinch rollers and shaft.

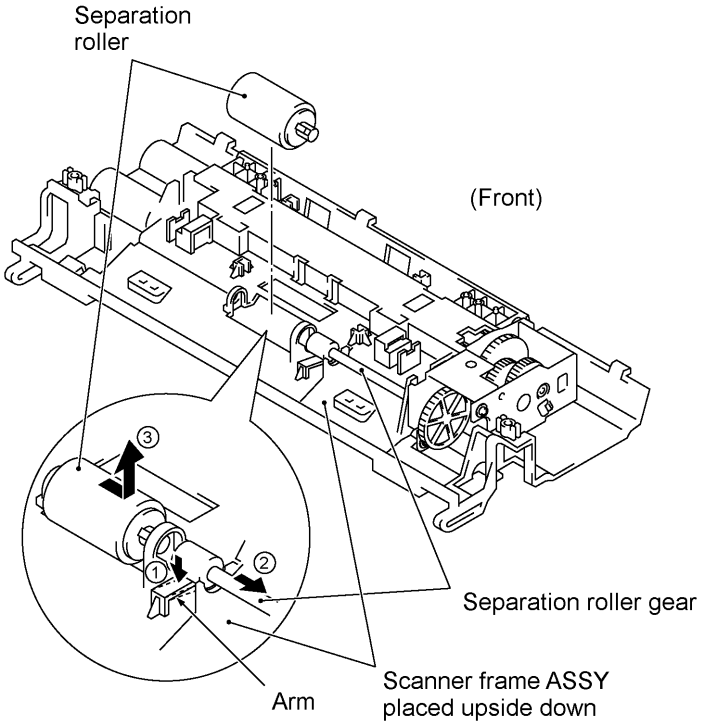
(13) Remove the control panel locks (leaf springs) by removing the screws.



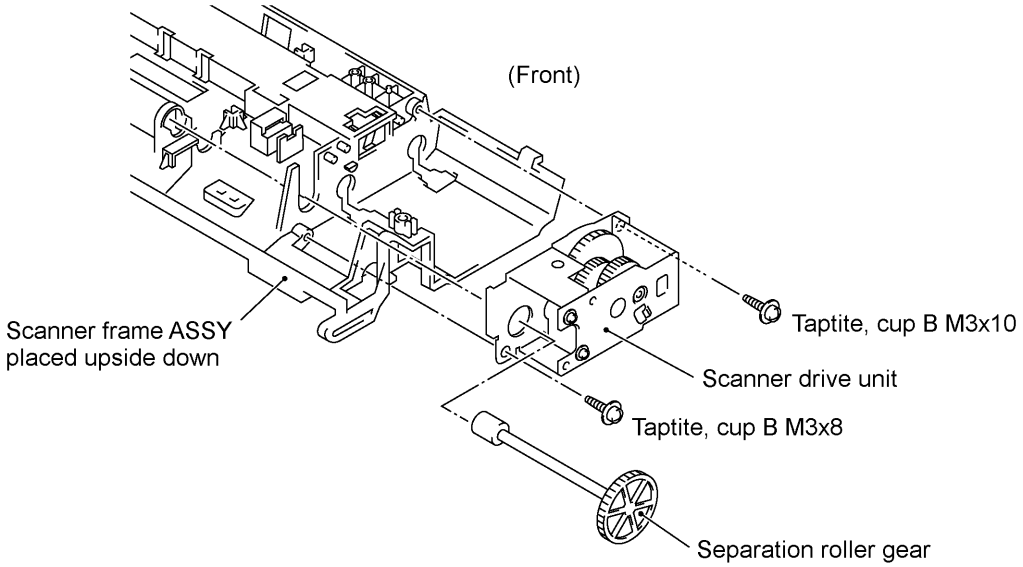
(14) Remove the pressure roller leaf springs by pulling them in the direction of arrows • and , in this order as shown below. Then remove the pressure rollers and shaft.



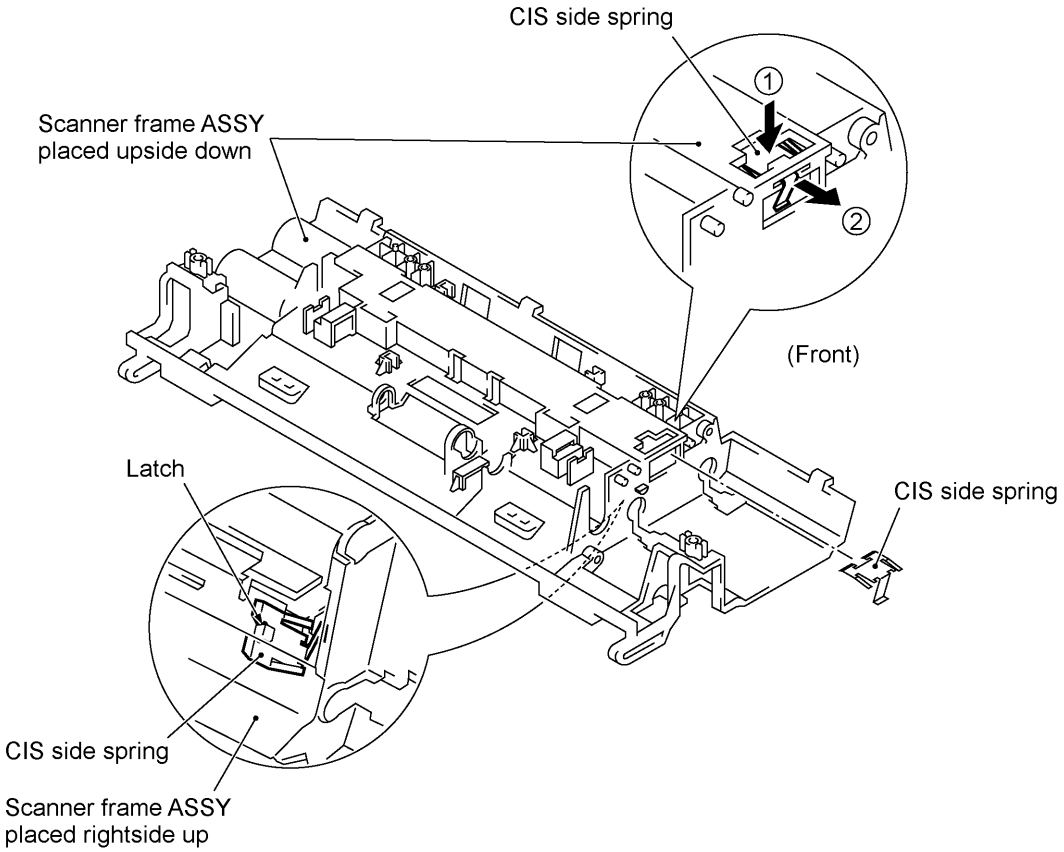
(15) Slightly push down the arm (in the direction of arrow •) and shift the separation roller gear to the right (arrow ,) when viewed from the rear. Then shift the separation roller to the right (arrow ƒ) and take it up.



(16) Take off the scanner drive unit by removing the two screws. The separation roller gear also comes off.



(17) Push down the CIS side spring to release it from the latch, then pull it out to the right (when viewed from the rear).



n Reassembling Notes

- When reinstalling the scanner motor, fit it in the latch provided on the scanner frame with the connector facing up and then secure it with the screw. (See page IV-17.)
- When setting the scanner frame ASSY back into place,
  - secure the grounding terminal to the scanner frame ASSY with the screw and route the grounding wire around boss "x" (as shown on page IV-16),
  - route the CIS harness through the scanner frame ASSY (or connect the CIS harness to the CIS unit if mounted),
  - route the panel-main harness through the cutout provided in the scanner frame ASSY.
- When reinstalling the CIS unit, first connect the CIS harness, insert the left end under the arm of the scanner frame, put the CIS unit into the scanner frame, and move it to right (see the illustration given on page IV-15).
- When attaching the CIS film, align the right, left and rear edges of the cutout with those provided in the scanner frame and fit its two tabs into the scanner frame, as illustrated on page IV-14.
- When connecting the scanner motor harness to the scanner motor connector, take care not to bend the shield film.
- Once removed, the shield film becomes unusable and a new part will have to be put back in.

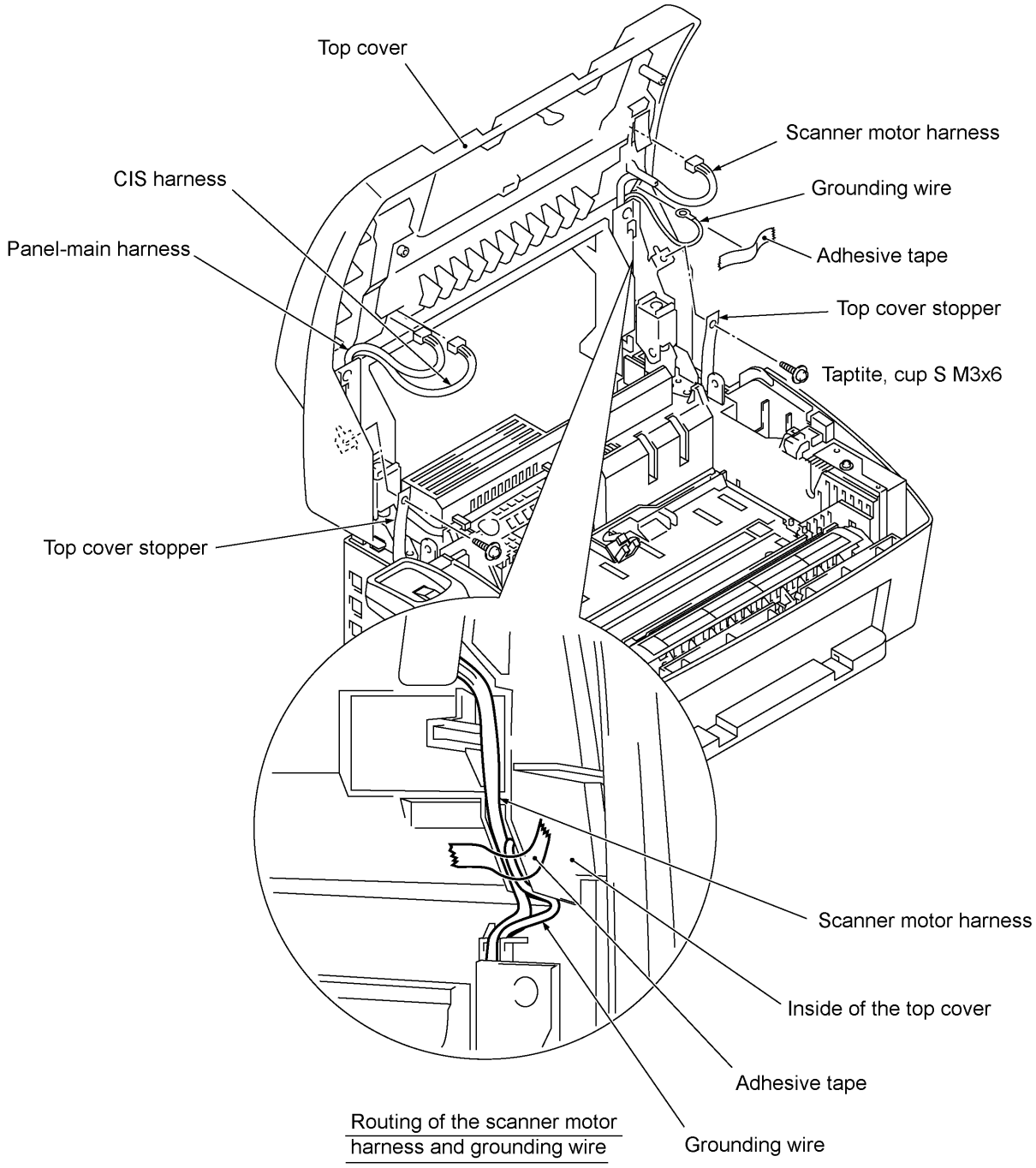
1.8 Top Cover

(1) Open the top cover.

(2) Remove one of two screws from each of right and left top cover stoppers, and then fully open the top cover.

(3) Pull the panel-main harness and CIS harness towards you.

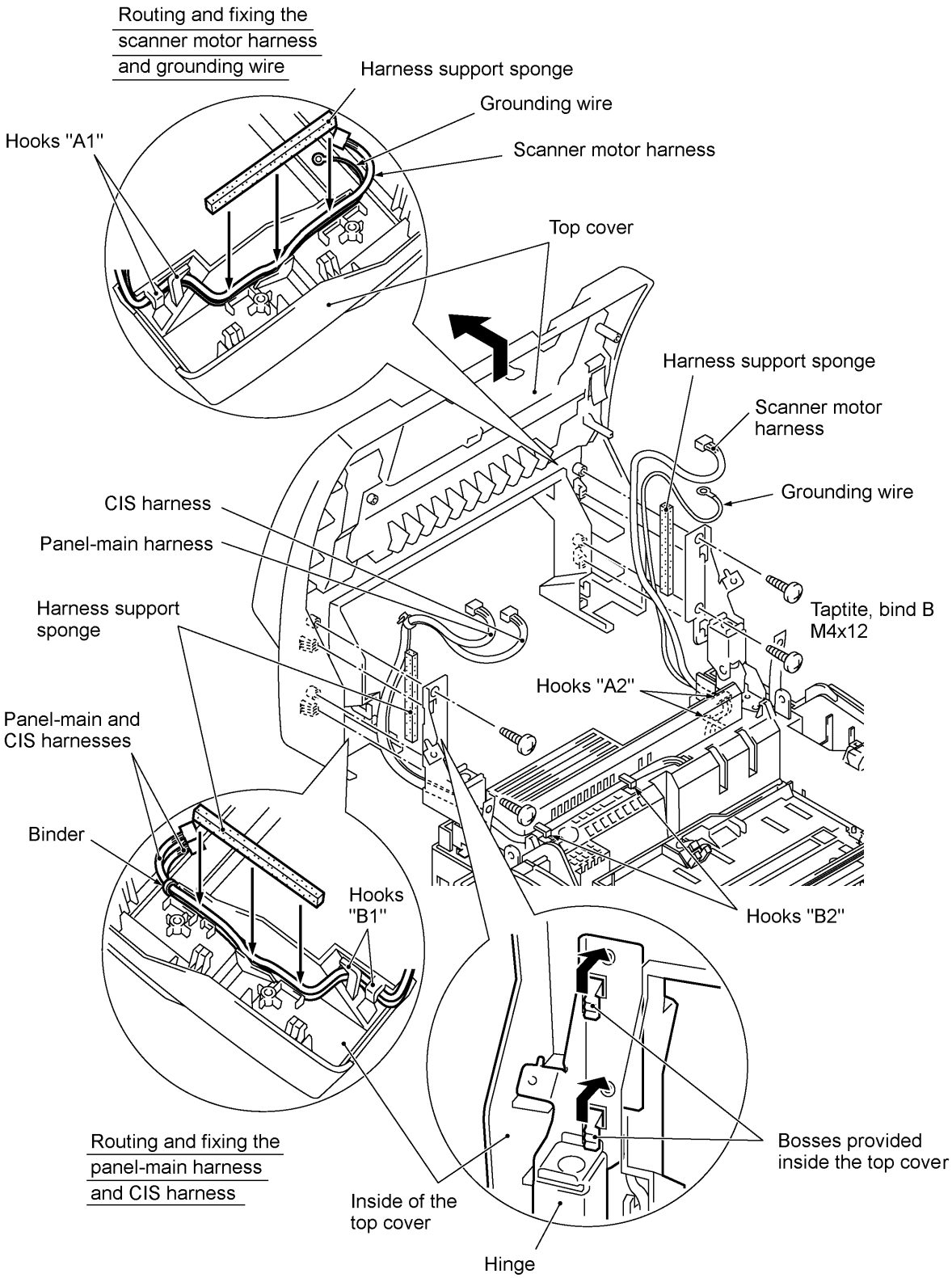
(4) Remove the adhesive tape and pull the scanner motor harness and grounding wire towards you.



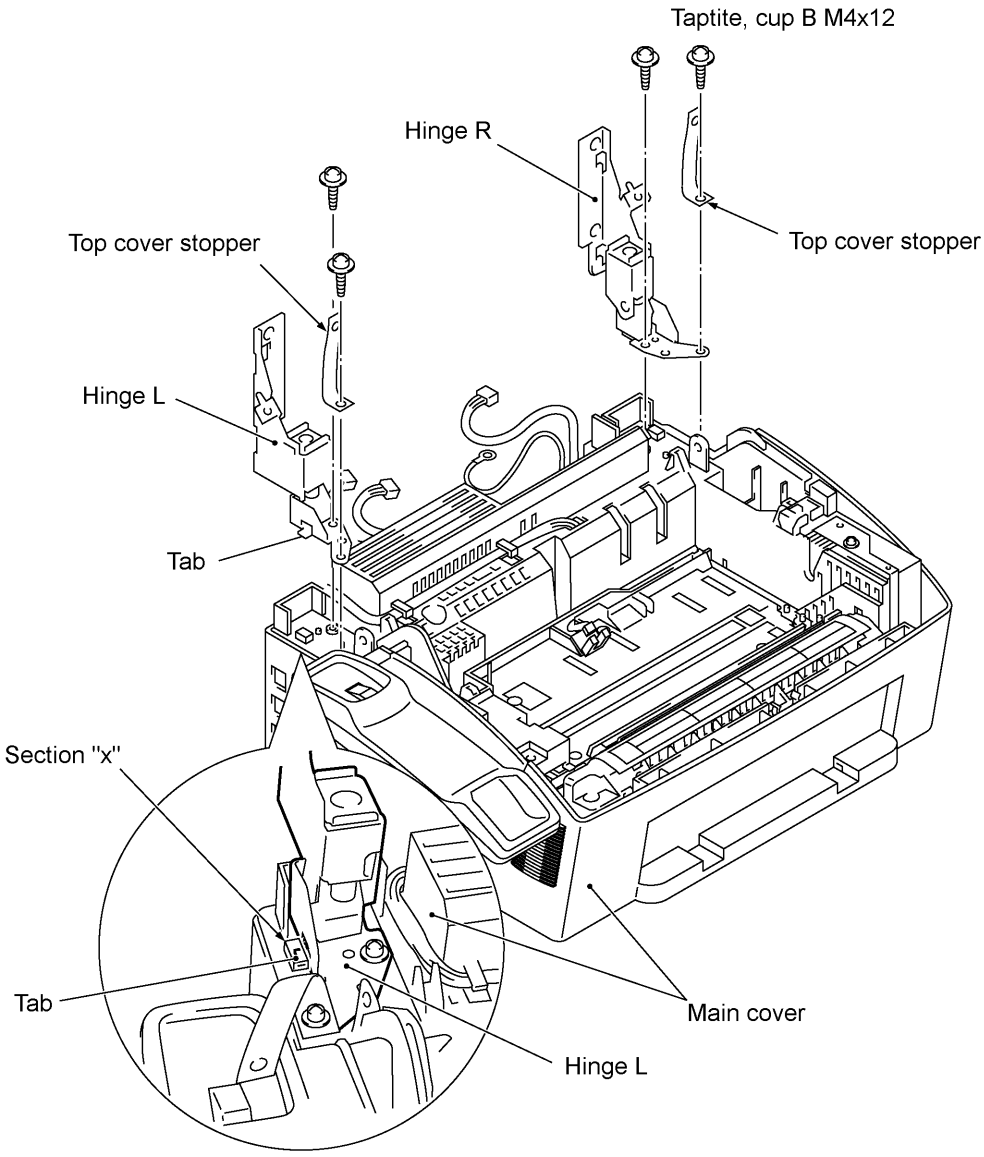
(5) Remove the four screws from the hinges R and L.

(6) Slightly lift up the top cover to release the bosses from the hinges and take it off to the rear.

(7) Remove the harness support sponges and take out the harnesses from the top cover.



(8) Remove the two screws from each of the hinges R and L. The top cover stoppers also come off.



Reassembling Notes

- When setting each hinge back into place, fit its tab in section "x" provided on the main cover.
- As illustrated on the previous page, route the scanner motor harness and grounding wire through hooks "A1" of the top cover and through hooks "A2" of the main cover, and then fix them with the support sponge. Route the panel-main harness and CIS harness through hooks "B1" of the top cover and through hooks "B2" of the main cover, and then fix them with the support sponge.
- When connecting the scanner motor harness to the scanner motor connector, take care not to bend the shield film.
- Once removed, the shield film becomes unusable and a new part will have to be put back in.

1.9 Handset Mount and Hook Switch PCB (for models except the FAX-8250P/MFC-9050) Side Cover (for the FAX-8250P/MFC-9050)

(1) Open the top cover.

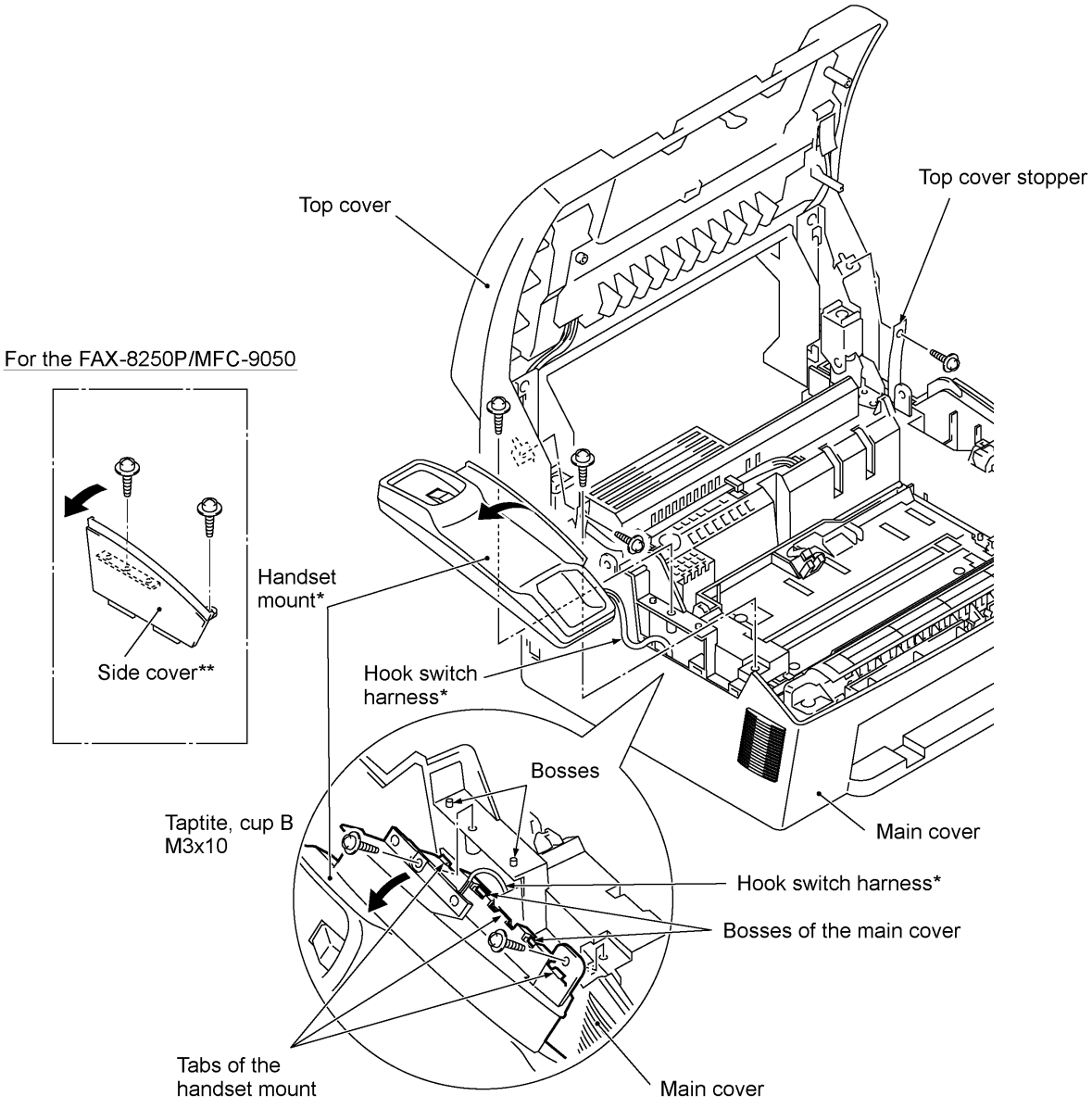
(2) Remove one of two screws from each of right and left top cover stoppers, then fully open the top cover.

(3) Remove the two screws from the handset mount* or side cover**.

(4) Twist the handset mount* or side cover** so that it tilts over to the left and its upper end works out of the bosses provided on the main cover.

NOTE: Do not pull the handset mount* away from the main cover. The hook switch harness* is connected to the main PCB in the main cover.

*For models except the FAX-8250P/MFC-9050
**For the FAX-8250P/MFC-9050

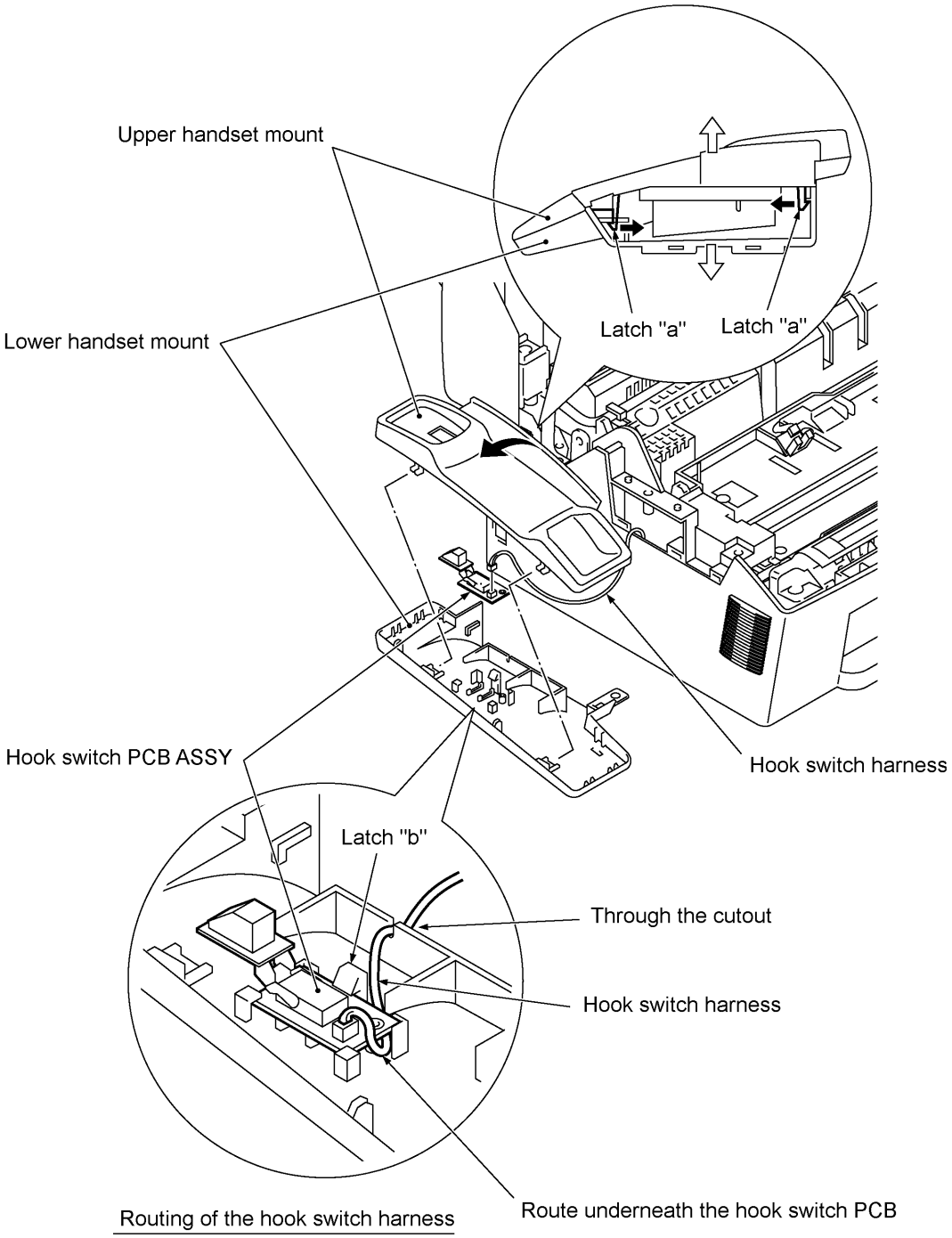


For models except the FAX-8250P/MFC-9050

(5) Disassemble the handset mount by unhooking two latches "a" of the upper handset mount with a flat screwdriver.

(6) Remove the hook switch PCB ASSY by unhooking latch "b."

(7) Disconnect the hook switch harness from the hook switch PCB



Routing of the hook switch harness

Reassembling Notes

- When assembling the upper and lower handset mounts, route the hook switch harness underneath the hook switch PCB and through the cutout as shown above. Take care not to pinch the harness between the upper and lower mounts.

1.10 Heat-fixing Unit, FU Lamp, and Paper Ejection Sensor Actuator

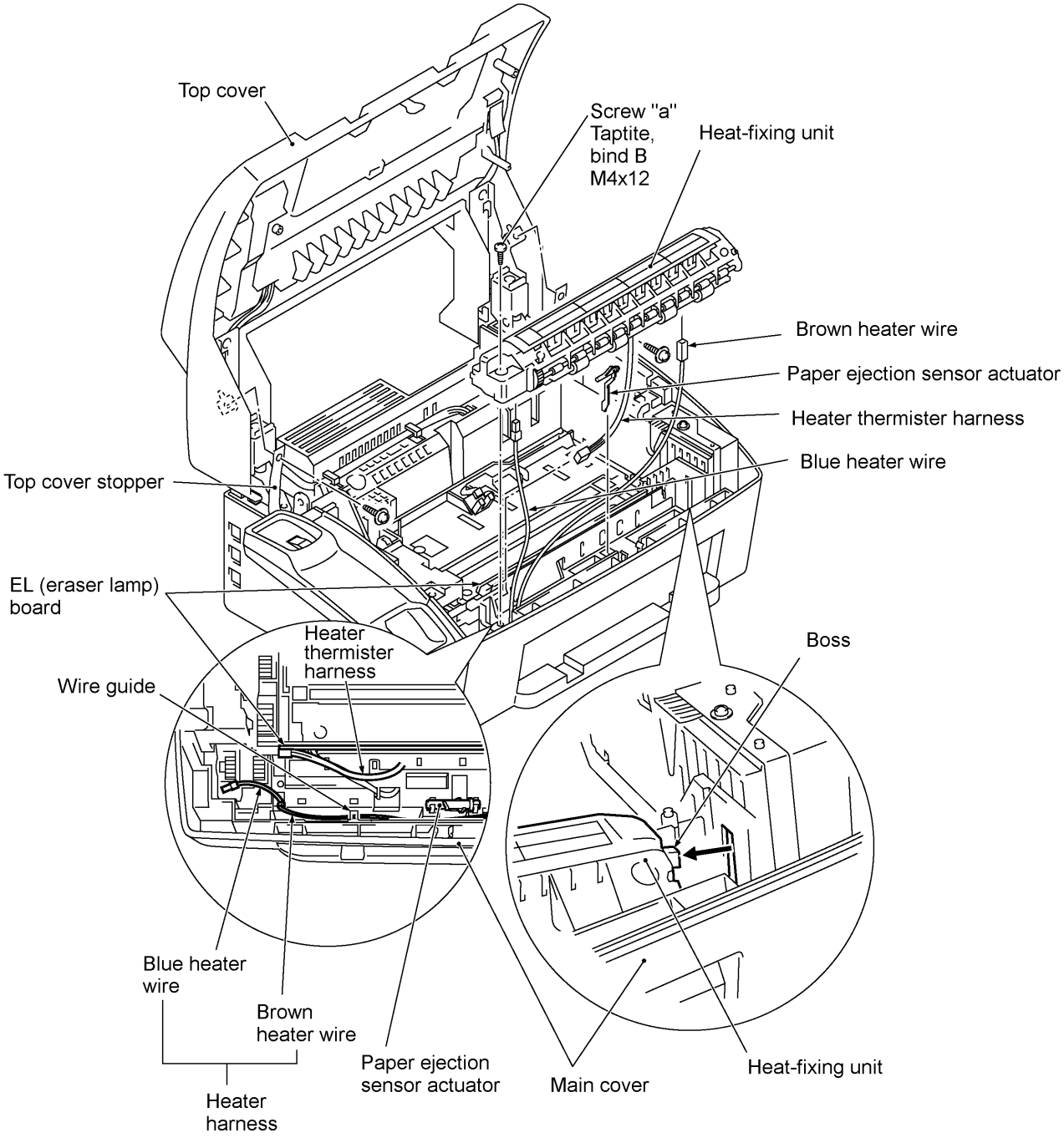
(1) Open the top cover.

(2) Remove one of two screws from each of right and left top cover stoppers, then fully open the top cover.

(3) Remove screw "a."

(4) Lift the left end of the heat-fixing unit up and to the left to release the right-hand boss from the main cover, hold it up, and disconnect the heater harness (of the blue and brown heater wires). Then disconnect the heater thermister harness from the EL (eraser lamp) board.

(5) Remove the paper ejection sensor actuator from the main cover.



(6) To take out the FU lamp from the heat-fixing unit, remove two screws "b."

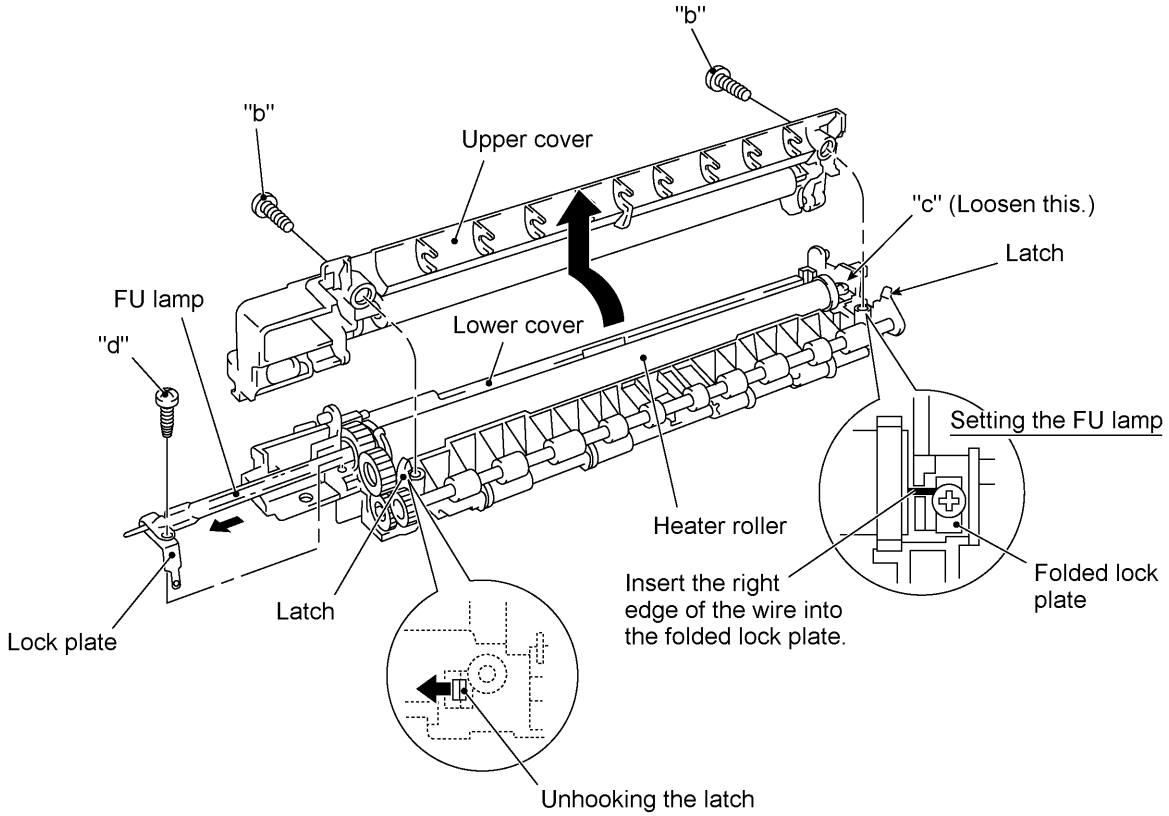
(7) Unhook the two latches outwards with the tip of a small flat screwdriver and open the upper cover.

(8) Fully open the upper cover and remove it.

(9) Remove screw "d" and loosen screw "c."

(10) Hold the lock plate of the FU lamp between your fingers and pull out the FU lamp from the heater roller.

CAUTION: Do not touch the FU lamp. If you have touched it, clean it thoroughly with alcohol.



Reassembling Notes

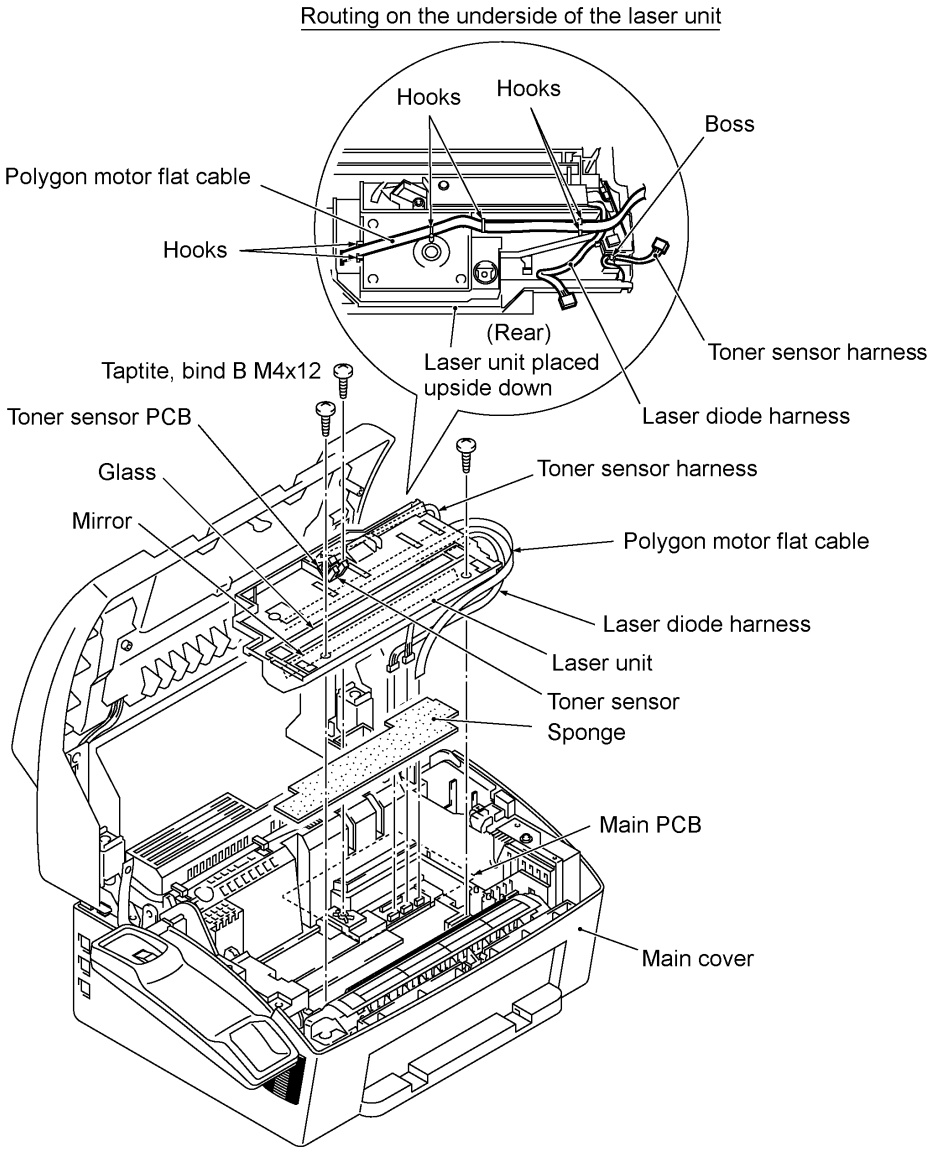
- When setting the FU lamp into the heat-fixing unit, be sure to insert the right edge of the wire into the folded lock plate.
- A new heat-fixing unit will be provided with the heater thermister harness being taped to the unit. When installing the unit, remove the tape.

1.11 Laser Unit and Toner Sensor PCB

(1) Remove the screw (Taptite, cup B M3x8) from the toner sensor PCB.
(2) Slightly lift up the toner sensor PCB and disconnect its harness.
(3) Remove the three screws from the laser unit.
(4) Slightly lift up the laser unit and disconnect the following from the main PCB:
- Laser diode harness (5-pin)
- Toner sensor harness (4-pin) if the toner sensor PCB is installed
- Polygon motor flat cable

NOTE: When handling the laser unit, take care not to touch the inside of the unit, glass, or mirror.

NOTE: On the small PCB at the right side of the laser unit is a 2-pin connector which is for the adjustment in the factory. Do not disturb it.



Reassembling Notes

- Before putting the laser unit back into place, check for any toner particles, paper dust or dirt, and clean them out.
- When installing the laser unit, make sure that the laser diode harness, toner sensor harness and polygon motor flat cable are routed as shown above.
- Make sure that the sponge is placed below the laser unit.

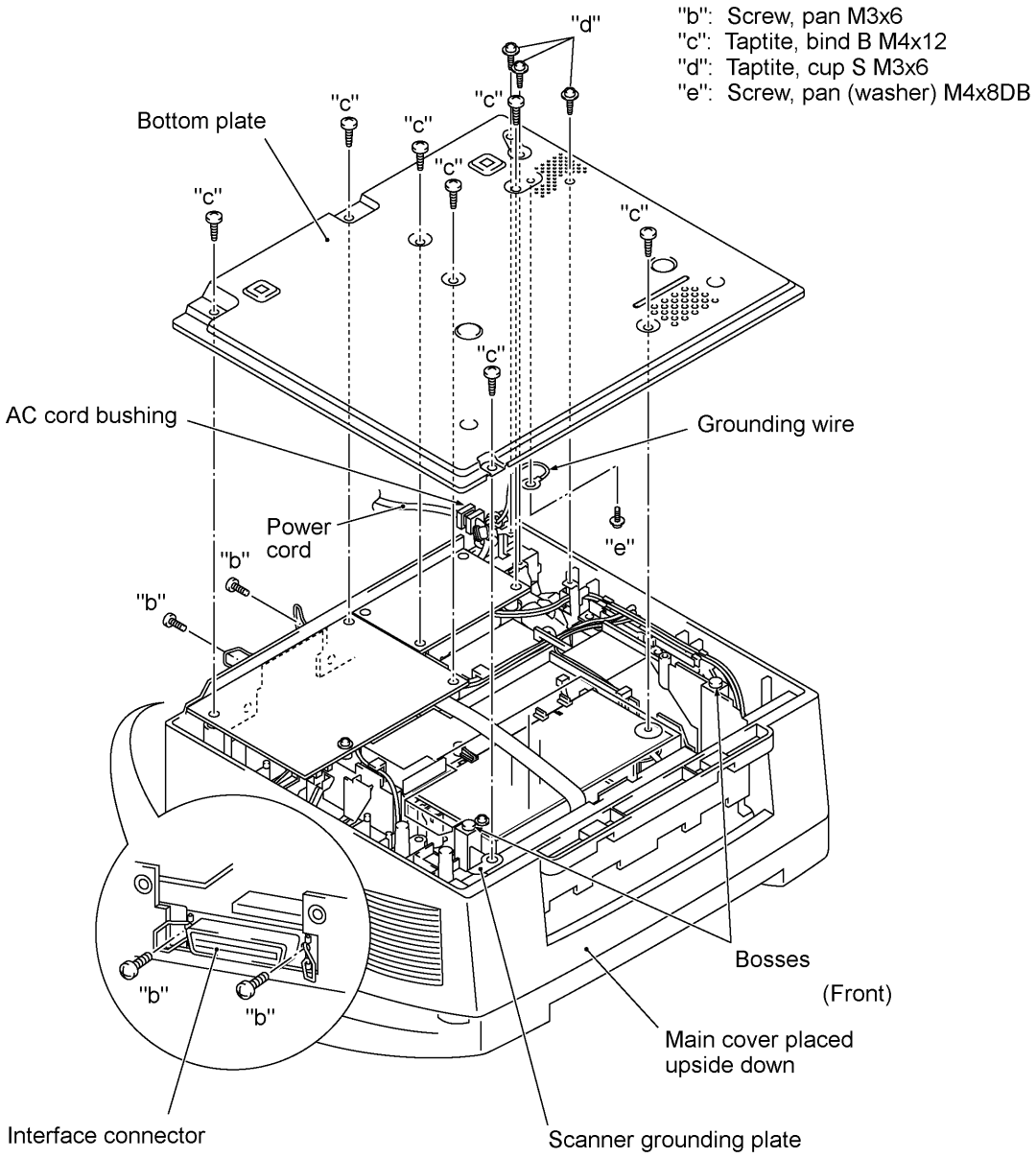
1.12 Bottom Plate

(1) Turn the facsimile equipment upside down.

(2) Remove two screws "b" from the interface connector.

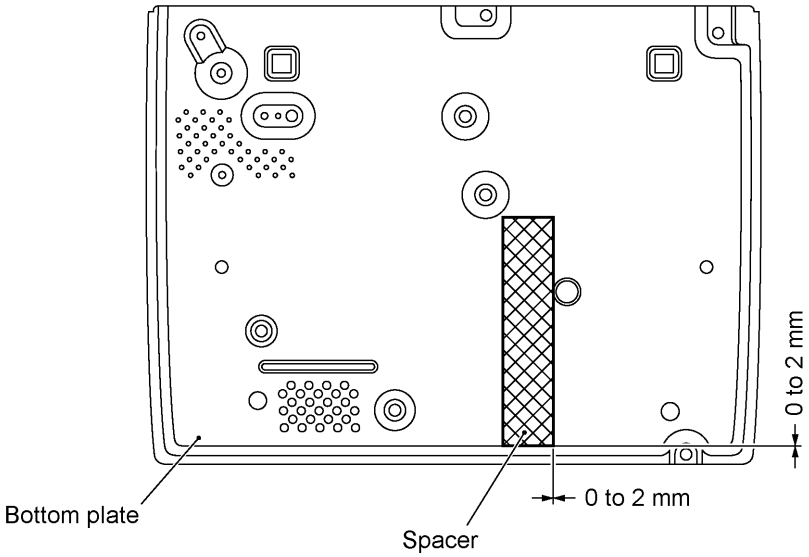
(3) Remove seven screws "c" and three screws "d" from the bottom plate.

(4) Slightly lift up the bottom plate, then take off the AC cord bushing and remove screw "e" from the grounding terminal.



Reassembling Notes

- When putting the bottom plate into place, secure the grounding wire to the bottom plate with screw "e," fit the AC cord bushing into the cutout of the bottom plate, and fit the holes over the bosses of the main cover. First tighten screws "b" (interface connector screws) and then tighten screws "c" and "d."
- Once removed, the spacer will become unusable and new one will have to be put back in.
- When replacing the bottom plate with a new one, be sure to attach a new spacer to the new bottom plate as specified below.

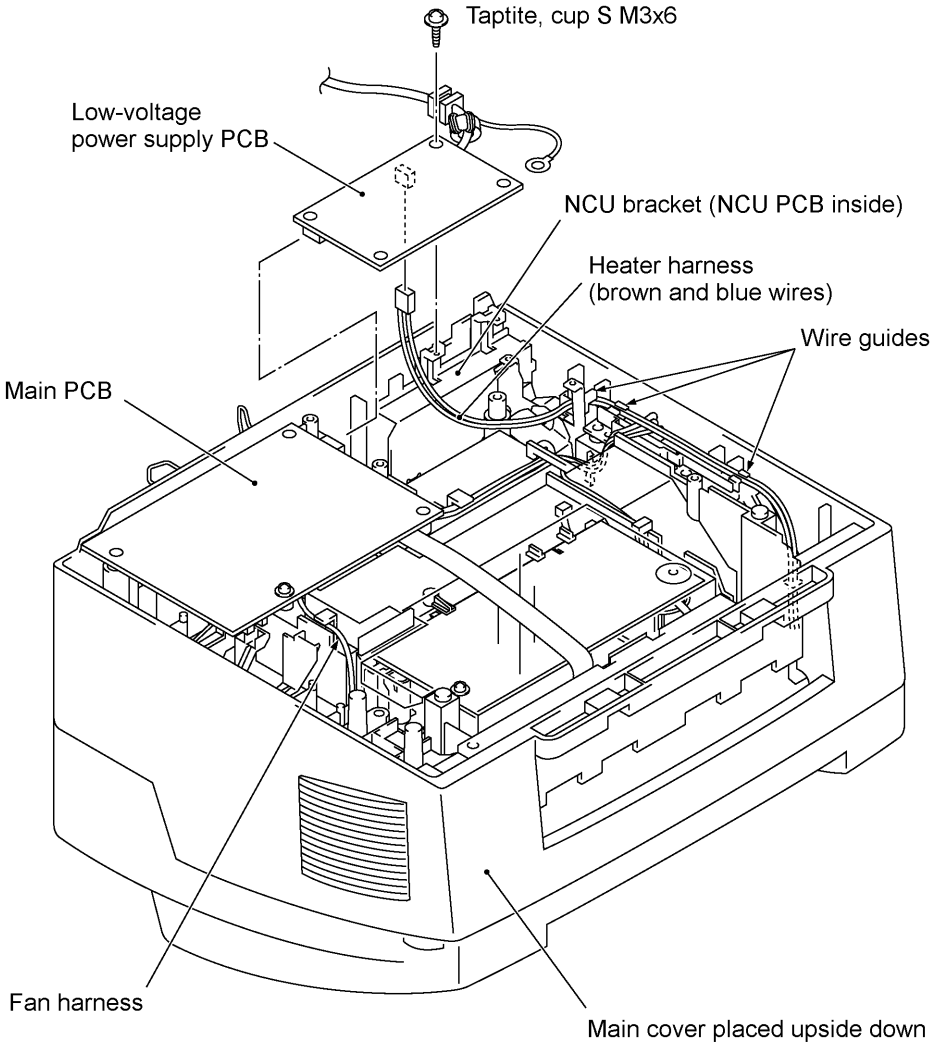


1.13 Low-voltage Power Supply PCB

(1) Remove the screw from the low-voltage power supply PCB.

(2) Slightly lift up the low-voltage power supply PCB and disconnect it from the main PCB.

(3) Disconnect the heater harness (of the blue and brown wires) from the low-voltage power supply PCB.



Reassembling Notes

- Be sure to route the heater harness through the three wire guides as illustrated above.

1.14 Main PCB

(1) For the FAX-8250P/MFC-9050 (French version only)/MFC-9550/MFC6650MC, take the battery ASSY*[1] out of the supports at the rear of the main cover.

(2) Remove the screw from the main PCB.

(3) Slightly lift up the main PCB and disconnect it from the low-voltage power supply PCB.

(4) Disconnect the following harnesses from the main PCB:

- Speaker harness (2-pin, P7)
- Laser diode harness (5-pin, P6)
- Toner sensor harness (4-pin, P5)
- Polygon motor flat cable (5-pin, P4)
- NCU harness 2*[2] (6-pin, P13)
- NCU harness (12-pin, P14)
- Solenoid harness (blue) (2-pin, P8)
- Hook switch harness*[3] (red) (2-pin, P9)
- Main motor harness (6-pin, P16)
- High-voltage power supply harness (12-pin, P20)
- Fan harness (2-pin, P3)
- CIS harness (7-pin, P19)
- Scanner motor harness (5-pin, P17)
- Panel-main harness (6-pin, P21)

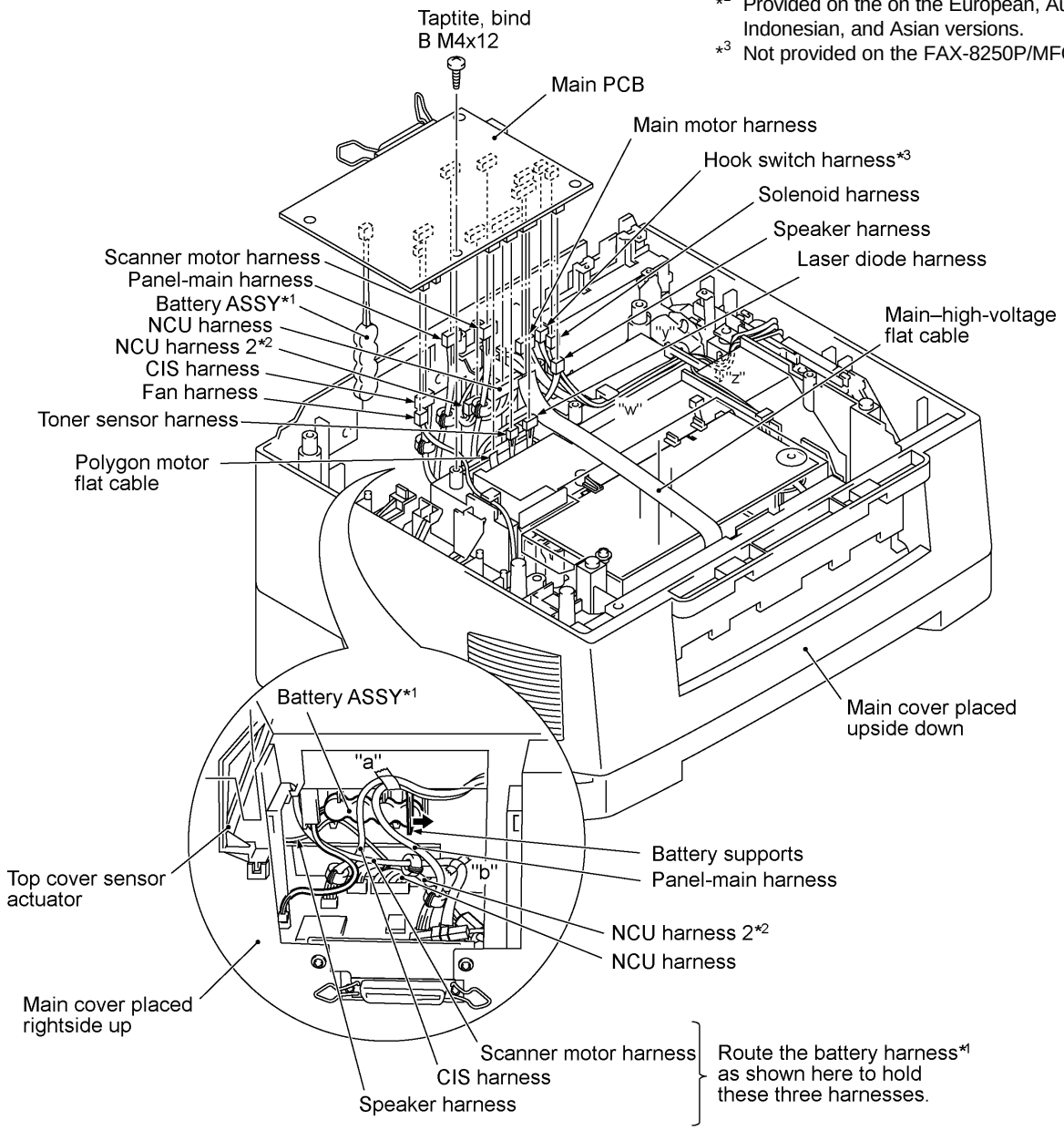
(*[2] Provided on the European, Australian, Indonesian, and Asian versions.)
(*[3] Not provided on the FAX-8250P/MFC-9050.)

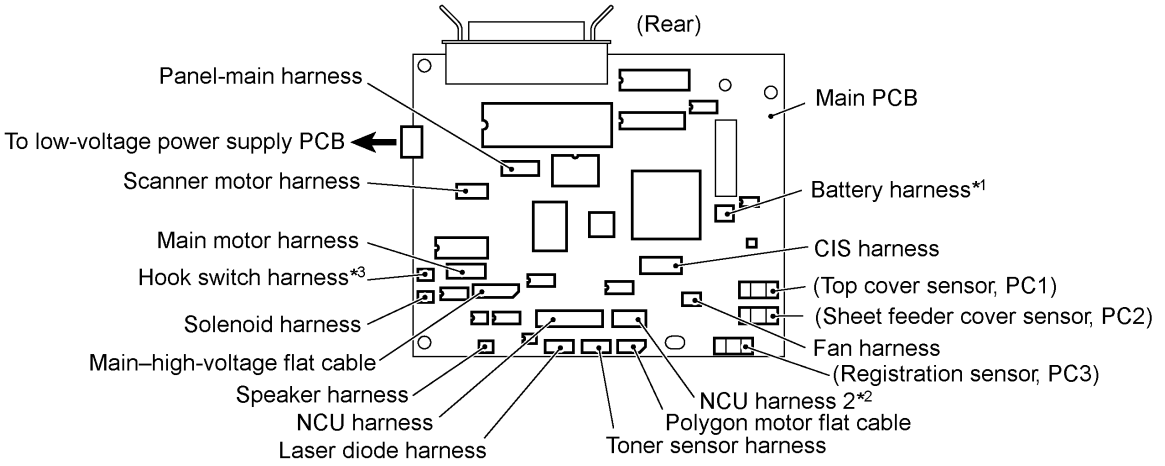
*[1] The FAX-8250P/MFC-9050 (French version only)/MFC-9550/MFC6650MC has a Ni-MH battery ASSY. Only when you need to replace the main PCB, disconnect the battery harness. After installing a new main PCB, you may need to make settings (e.g., calendar clock and voice messages) to be stored in the RAM. If you need to replace the battery ASSY, do not disconnect the harness in this disassembly step. Doing so with the power cord unplugged will lose the settings stored in the RAM. Refer to Section 1.1.

Reassembling Notes

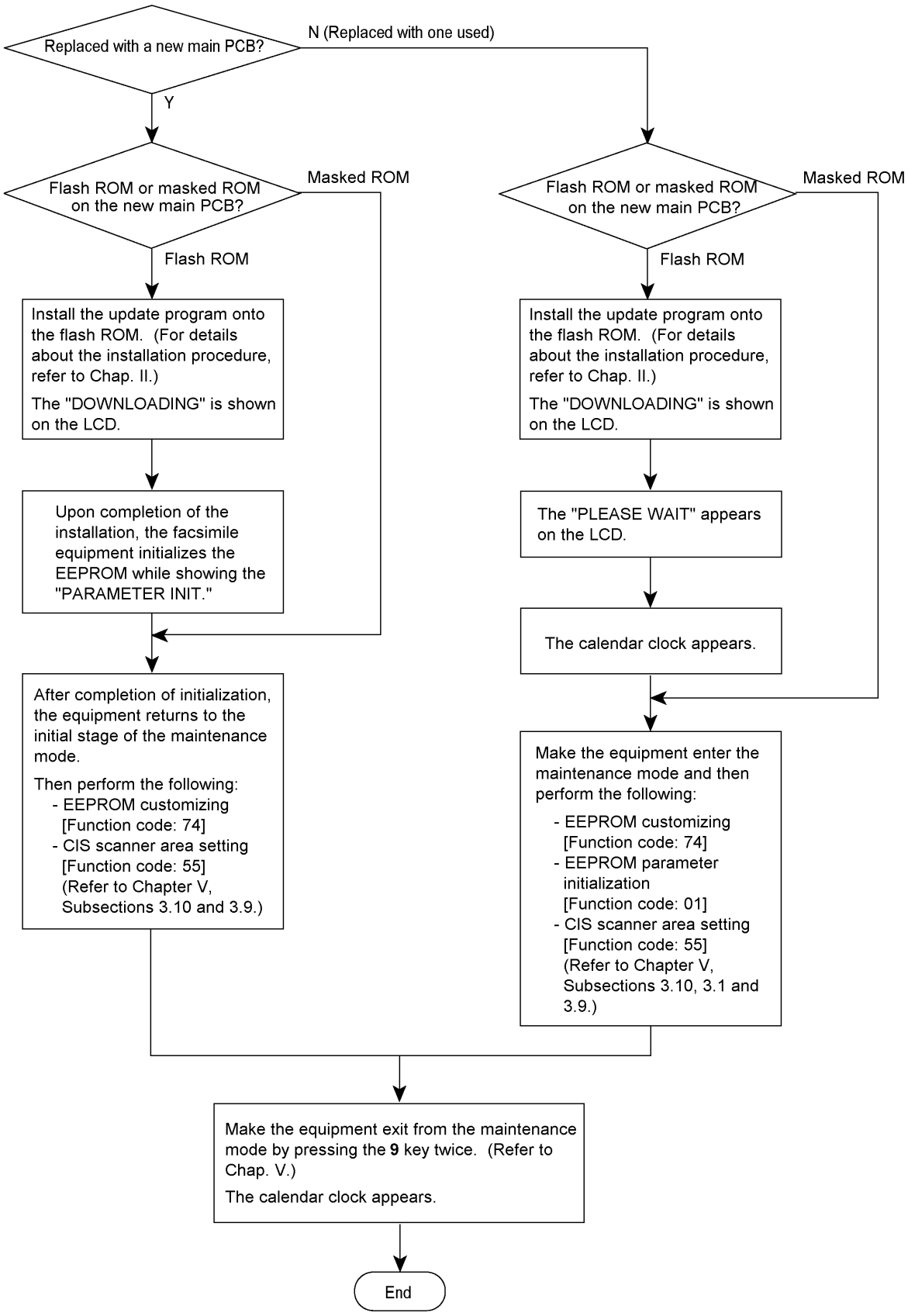
- Route the hook switch harness (red), solenoid harness (blue), and main motor harness through three latches "w," "y" and "z."
- At the rear side of the main cover, route the harnesses as shown on the next page. Hook the speaker harness on the left-hand battery support. For the FAX-8250P/MFC-9050 (French version only)/MFC-9550/MFC6650MC, route the battery harness as shown on the next page to hold the three harnesses (scanner motor harness, CIS harness and speaker harness) for preventing the battery harness from interfering with the top cover sensor actuator.
- Tape the CIS harness and panel-main harness at location "a" and tape the scanner motor at location "b" as shown on the next page.
- For the FAX-8250P/MFC-9050 (French version only)/MFC-9550/MFC6650MC, when transporting the main PCB, be sure to remove the battery ASSY (Ni-MH battery) from the PCB. Failure to do so may result in a short circuit, overcurrent flow or fire.
- After you replace the main PCB, be sure to follow the flowchart given on page IV-34.

*1 Provided on the FAX-8250P/MFC-9050 (French version only)/MFC6650MC/MFC-9550.
*2 Provided on the on the European, Australian, Indonesian, and Asian versions.
*3 Not provided on the FAX-8250P/MFC-9050.





Setting up the main PCB after replacement


Replaced with a new main PCB?
N (Replaced with one used)
Y
Flash ROM or masked ROM on the new main PCB?
Masked ROM
Flash ROM
Install the update program onto the flash ROM. (For details about the installation procedure, refer to Chap. II.)
The "DOWNLOADING" is shown on the LCD.
Upon completion of the installation, the facsimile equipment initializes the EEPROM while showing the "PARAMETER INIT."
After completion of initialization, the equipment returns to the initial stage of the maintenance mode.
Then perform the following:
- EEPROM customizing [Function code: 74]
- CIS scanner area setting [Function code: 55] (Refer to Chapter V, Subsections 3.10 and 3.9.)
Flash ROM or masked ROM on the new main PCB?
Masked ROM
Flash ROM
Install the update program onto the flash ROM. (For details about the installation procedure, refer to Chap. II.)
The "DOWNLOADING" is shown on the LCD.
The "PLEASE WAIT" appears on the LCD.
The calendar clock appears.
Make the equipment enter the maintenance mode and then perform the following:
- EEPROM customizing [Function code: 74]
- EEPROM parameter initialization [Function code: 01]
- CIS scanner area setting [Function code: 55] (Refer to Chapter V, Subsections 3.10, 3.1 and 3.9.)
Make the equipment exit from the maintenance mode by pressing the 9 key twice. (Refer to Chap. V.)
The calendar clock appears.
End

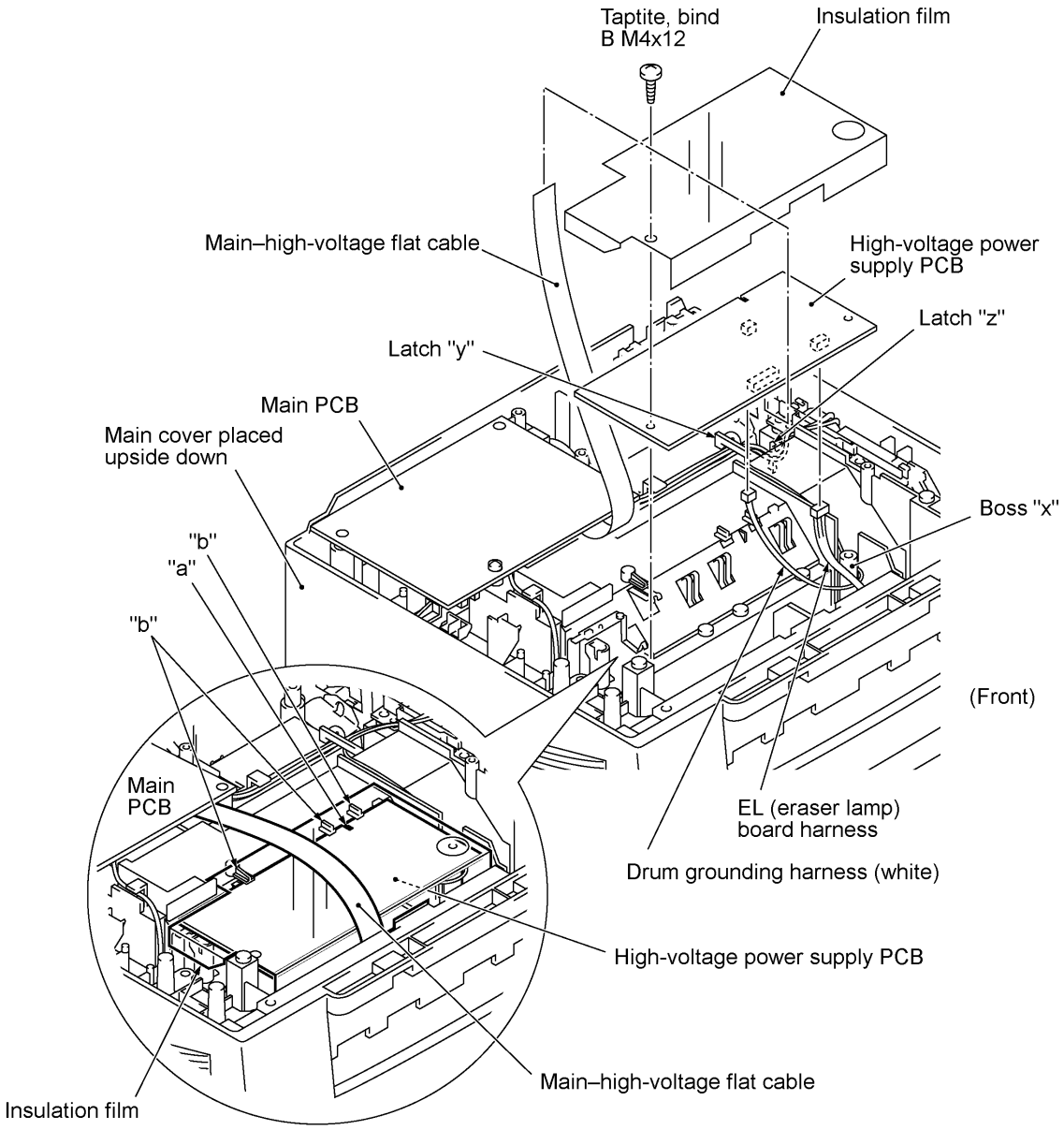
1.15 High-voltage Power Supply PCB

(1) Remove the screw from the insulation film and high-voltage power supply PCB.

(2) Remove the insulation film.

(3) Slightly lift up the high-voltage power supply PCB and disconnect the main–high-voltage flat cable.

(4) Disconnect the EL (eraser lamp) board harness and drum grounding harness from the high-voltage power supply PCB.

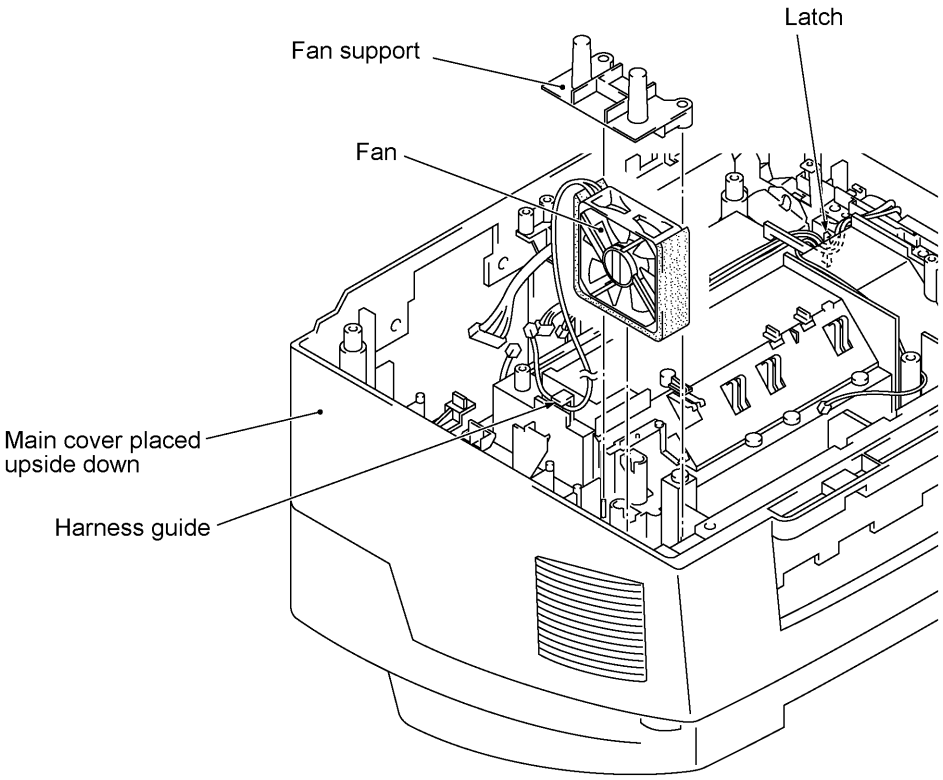


Reassembling Notes

- Before reinstalling the high-voltage power supply PCB, check the high-voltage contacts for any toner particles, paper dust or dirt, and clean them out.
- Be sure to route the drum grounding harness through boss "x" and latches "y" and "z."
- When putting the high-voltage power supply PCB back into place, first fit the cutout provided in the PCB over "a" and insert the rear edge under "b," and then secure the PCB together with the insulation sheet to the main cover with the screw.

1.16 Fan

(1) If the main PCB is installed, remove the screw from the main PCB (refer to Section 1.14).
(2) Slightly lift up the main PCB and disconnect the fan harness from the main PCB.
(3) Take out the fan support.
(4) Pull up the fan.

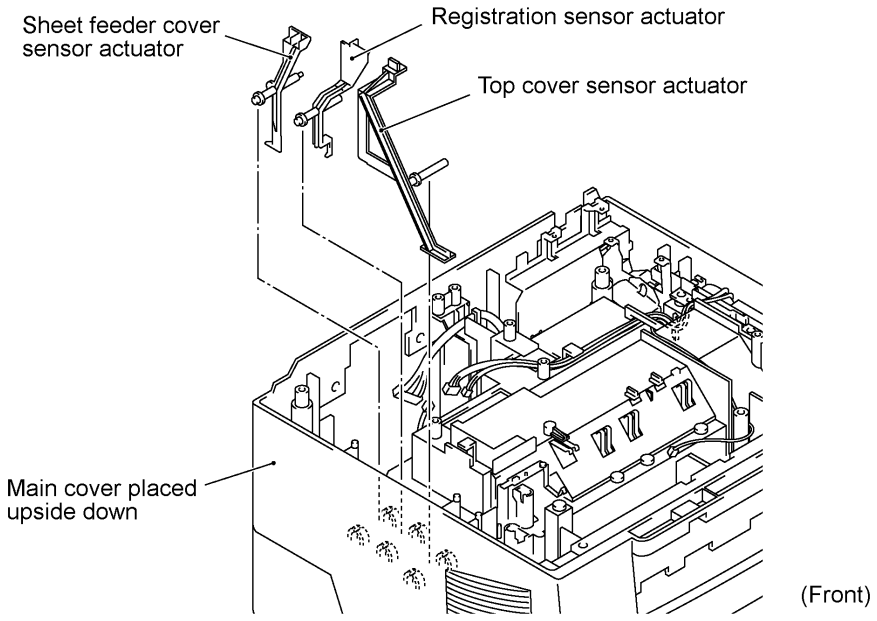


Reassembling Notes

- Put the fan back into place with the non-sponge end facing up and with the label side facing outwards.
- Route the fan harness through the harness guide as shown above.

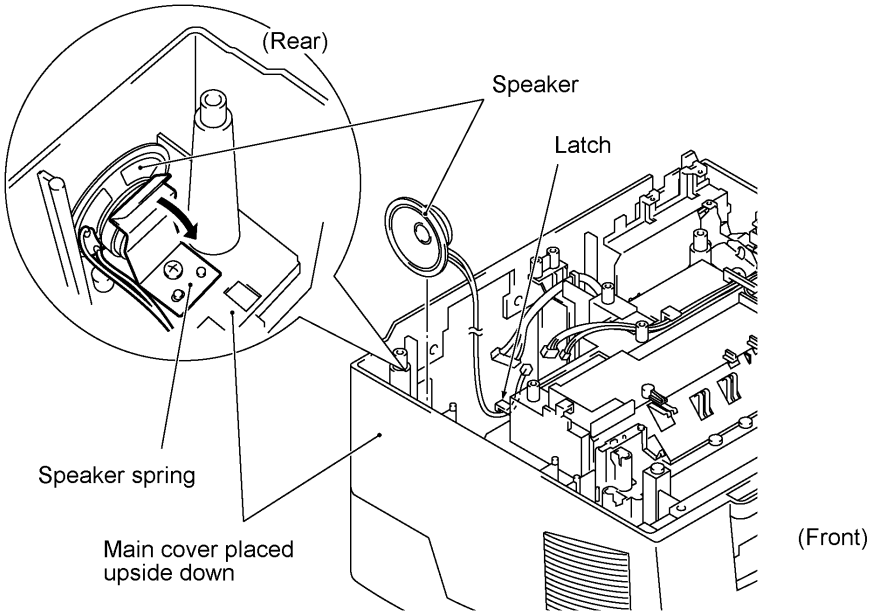
1.17 Registration Sensor Actuator, Sheet Feeder Cover Sensor Actuator, and Top Cover Sensor Actuator

(1) Pull up the registration sensor actuator, sheet feeder cover sensor actuator, and top cover sensor actuator.



1.18 Speaker

(1) Pull the speaker spring inwards and pull up the speaker.



Reassembling Notes

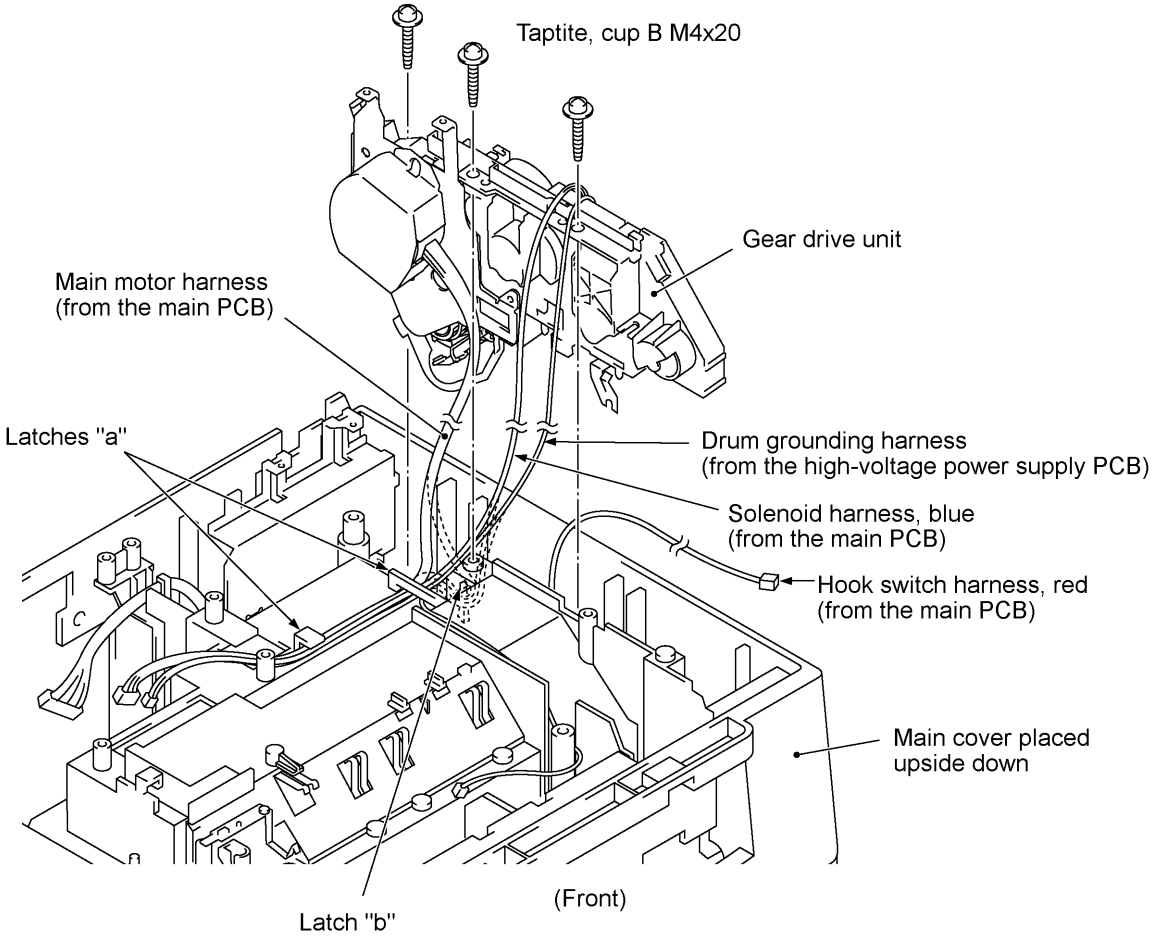
- Put the speaker into place with its harness facing to the front.
- Route the speaker harness through the latch as shown above.

1.19 Gear Drive Unit

(1) Make sure that the heat-fixing unit is removed.

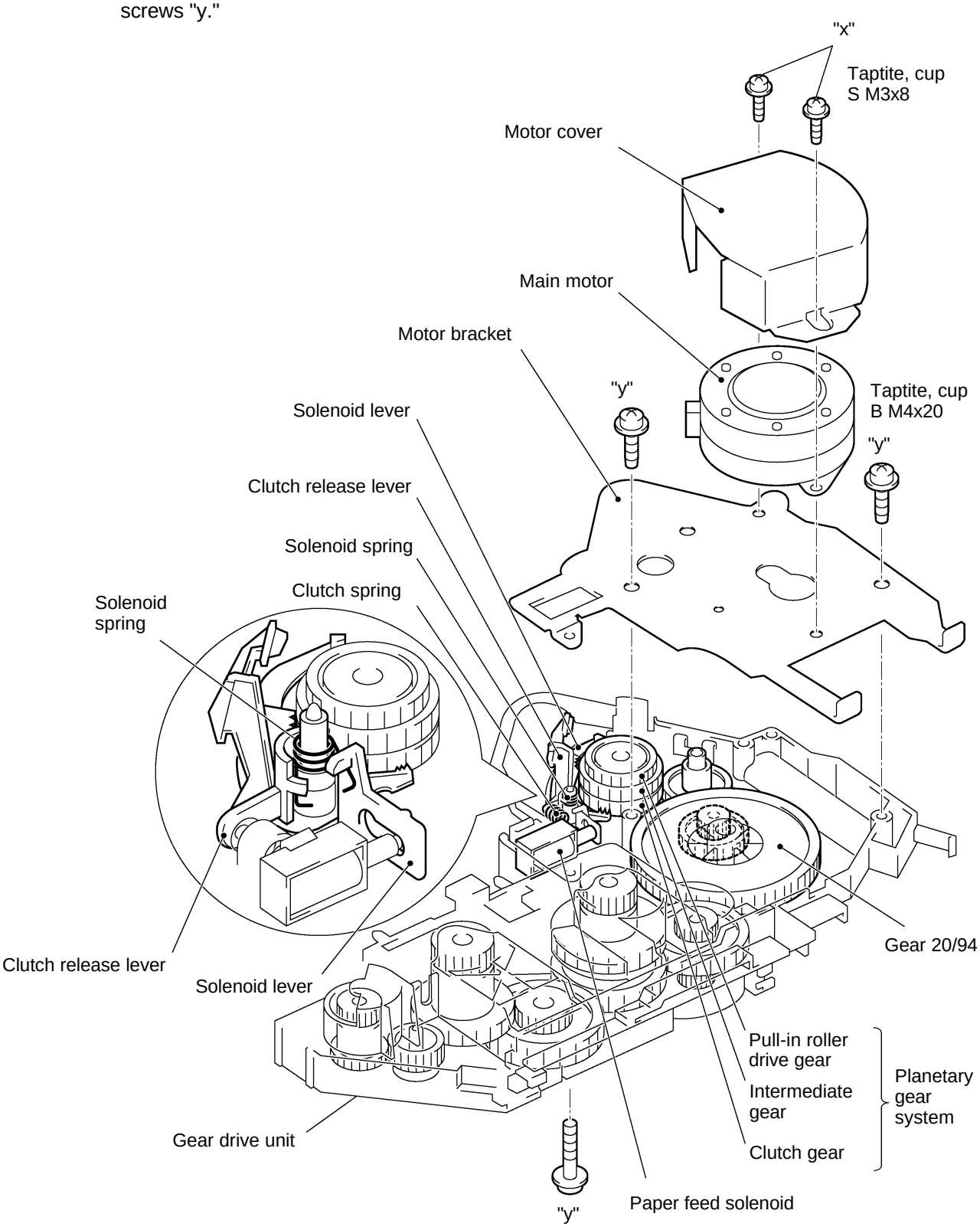
(2) Remove the three screws from the gear drive unit.

(3) Lift the gear drive unit up and out of the main cover.



(4) To take off the motor cover and main motor, remove two screws "x."

(5) To take off the paper feed solenoid, solenoid lever, or clutch release lever, remove three screws "y."

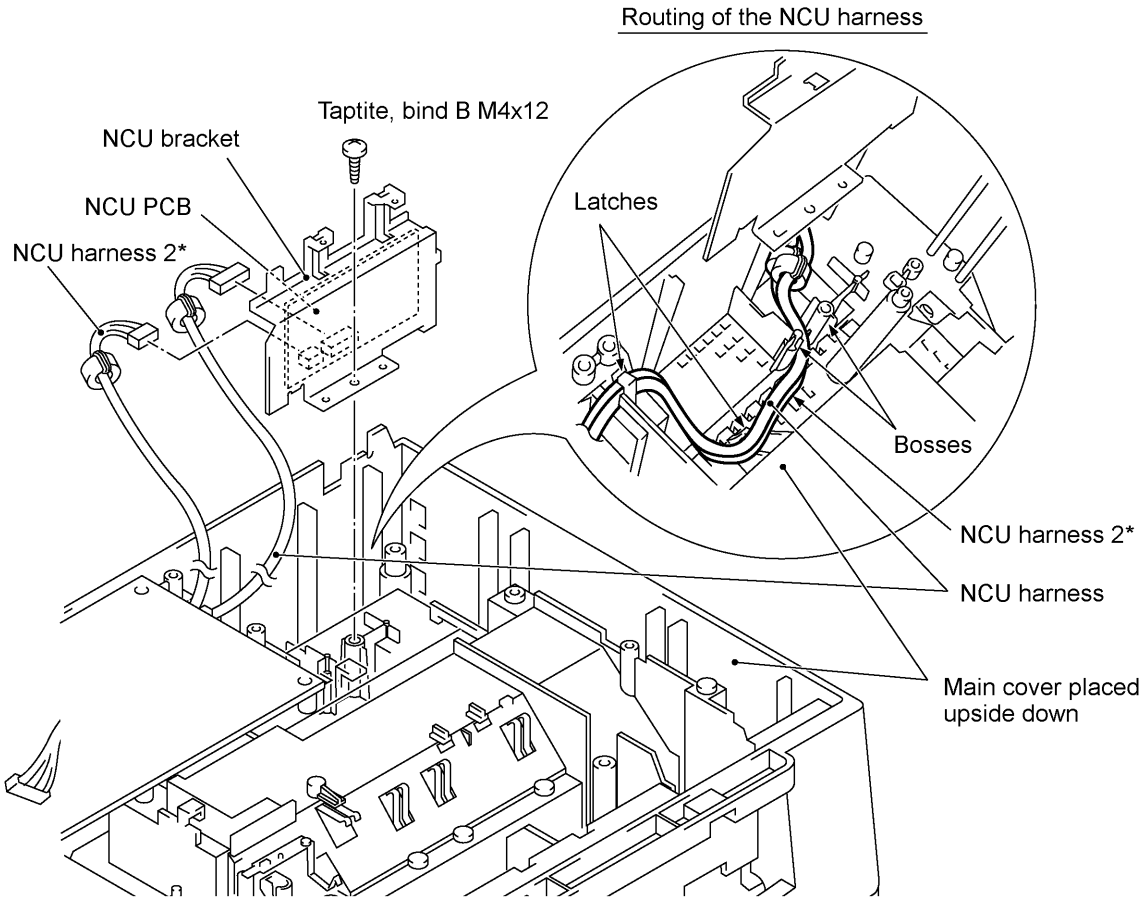


1.20 NCU PCB

(1) Make sure that the MJ cover, low-voltage power supply PCB and gear drive unit are removed.

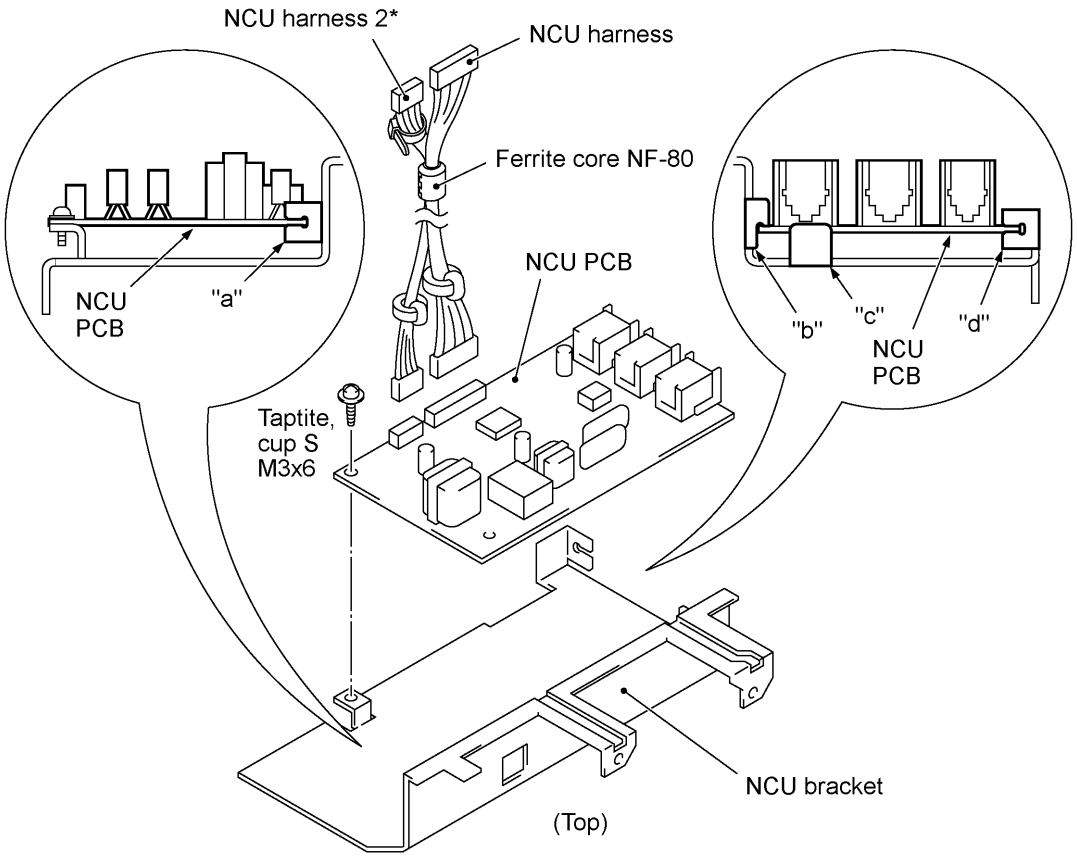
(2) Remove the screw from the NCU bracket.

(3) Slightly lift up the NCU bracket (which holds the NCU PCB) and then disconnect the NCU harness from the NCU PCB.



(* Provided on the European, Australian, Indonesian, and Asian versions.)

(4) Remove the screw and take off the NCU PCB from the NCU bracket.



(* Provided on the European, Australian, Indonesian, and Asian versions.)

Reassembling Notes

- When setting the NCU PCB to the NCU bracket, fit its edges onto "b" and "c" and into "a" and "d" as illustrated above.
- European, Australian, Indonesian, and Asian versions: First bind the NCU harness and NCU harness 2 together with the ferrite core NF-80 so that the NF-80 comes near to the binder on the NCU harness 2 as shown above, and connect those harnesses to the main PCB. Then hook them to the two latches and route them between the two bosses as illustrated on the previous page.

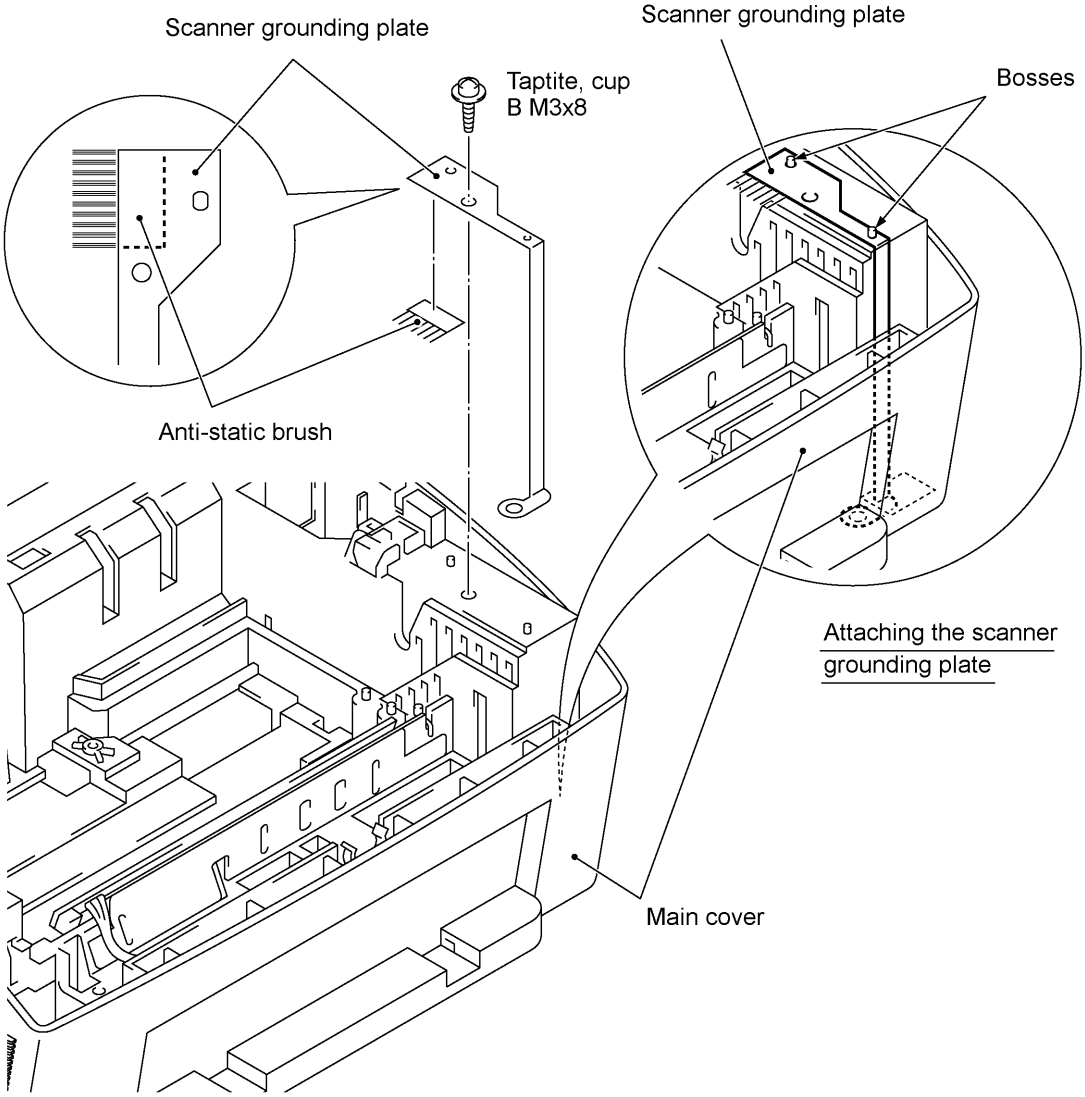
  Other versions: Hook the NCU harness to the two latches and route it between the two bosses as illustrated on the previous page.

1.21 Scanner Grounding Plate

(1) Make sure that the heat-fixing unit is removed.

(2) Remove the screw from the scanner grounding plate and take it off. (If the bottom plate has not been removed, remove front screw "c" also (see page IV-29) that secures both the scanner grounding plate and bottom plate.)

(3) You may peel off the anti-static brush from the scanner grounding plate.



Reassembling Notes

- Once removed, the anti-static brush will become unusable and new one will have to be put back in.
- Before attaching a new anti-static brush onto the scanner grounding plate, wipe the surface of the attaching place with a cloth dampened with alcohol.
- When reinstalling the scanner grounding plate, fit it over the two bosses of the main cover.

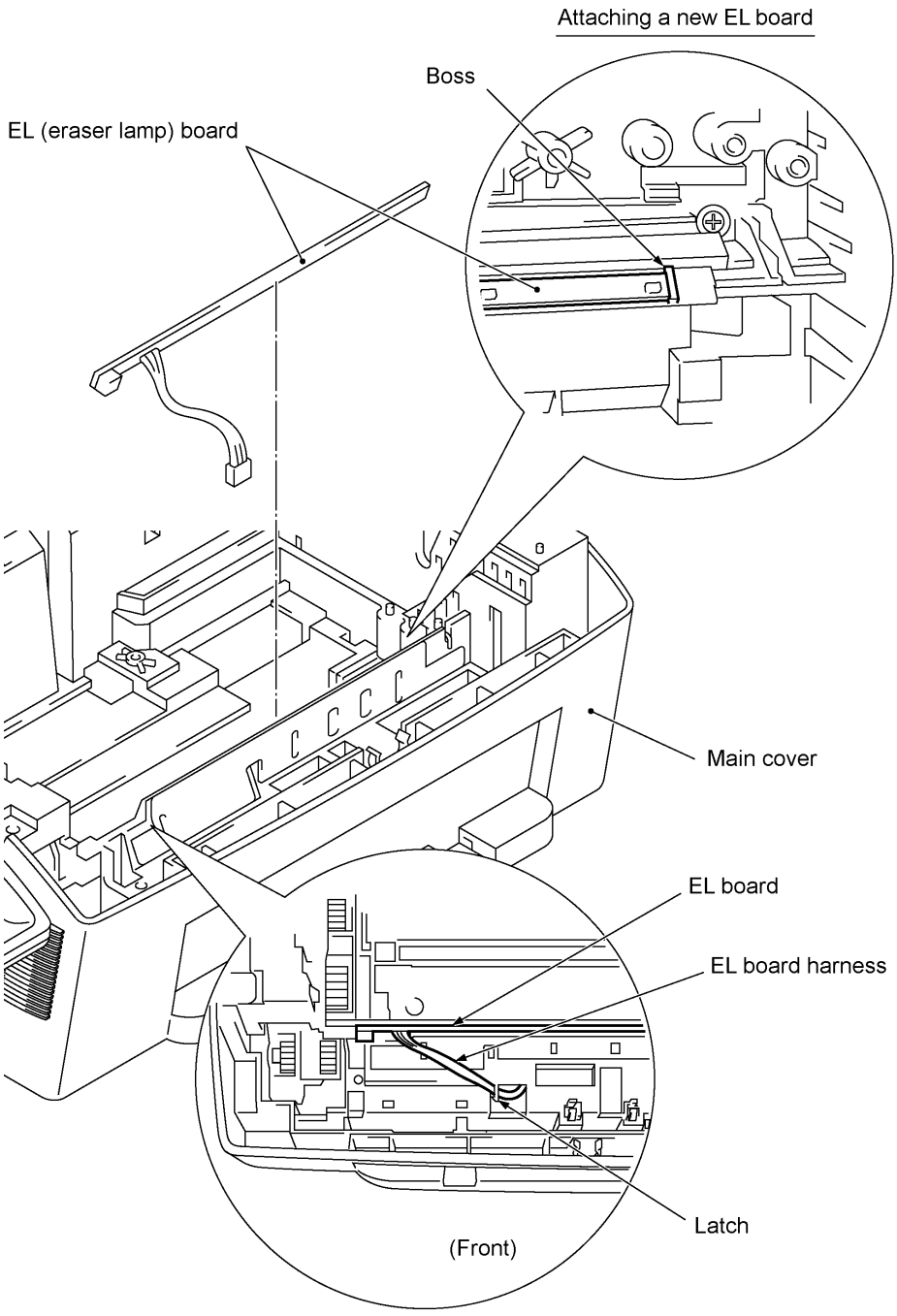
1.22 EL (Eraser Lamp) Board

Only when you need to replace the EL board (which is attached with double-sided adhesive tape), remove it according to the steps below.

(1) Make sure that the EL board harness is disconnected from the high-voltage power supply PCB. (Refer to Section 1.15.)

(2) Make sure that the heat-fixing unit is removed.

(3) Peel off the EL board from the main cover and clear adhesive tape if remaining.



Reassembling Notes

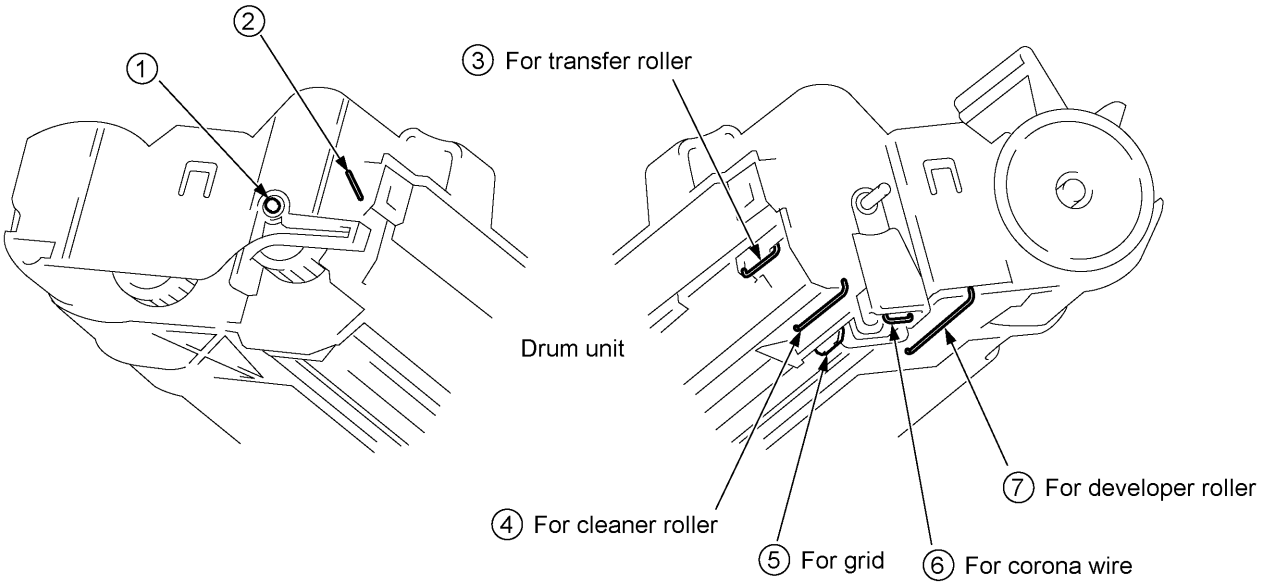
- When attaching a new EL board, bring the right end into contact with the boss provided on the main cover.

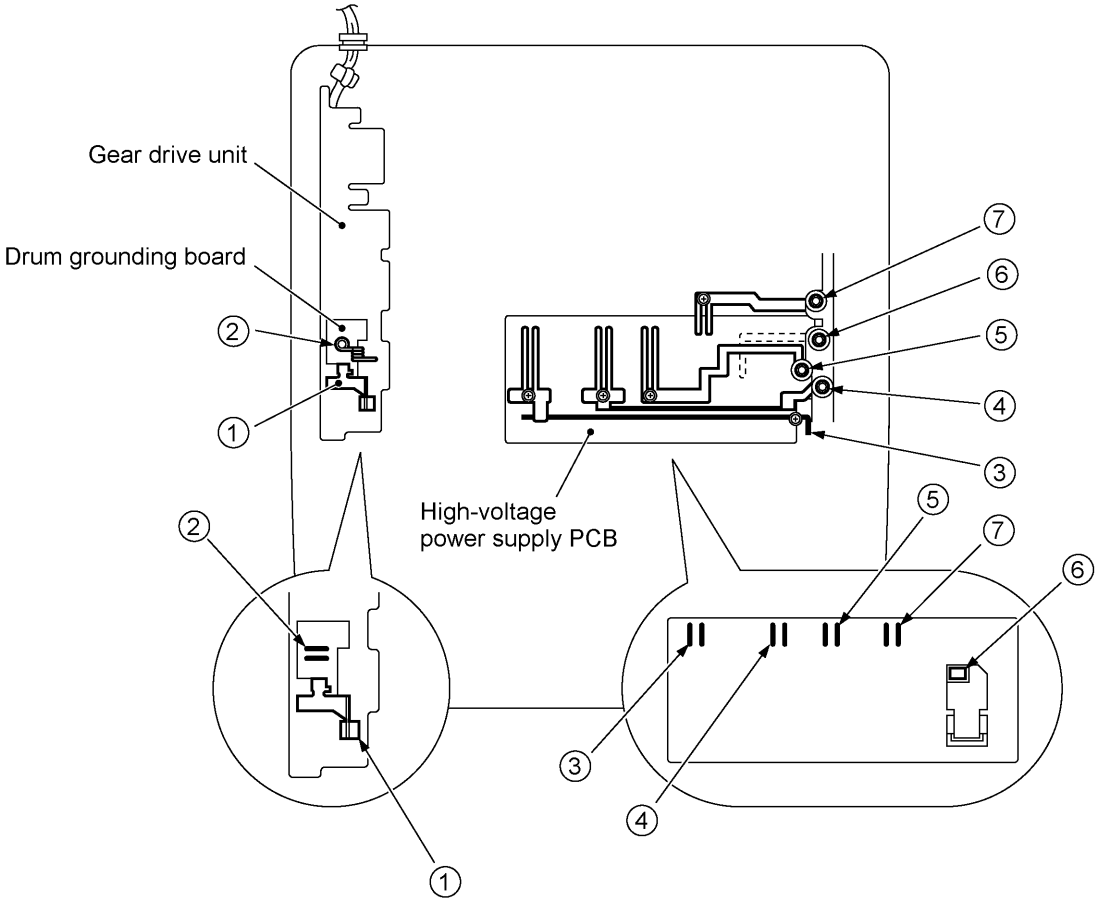
1.23 Cleaning of High-voltage Contacts and Grounding Contacts

If any toner particles, paper dust or dirt are on the contacts, clean them out. This will ensure that power flows correctly to enable printing.

Grounding contacts

High-voltage contacts



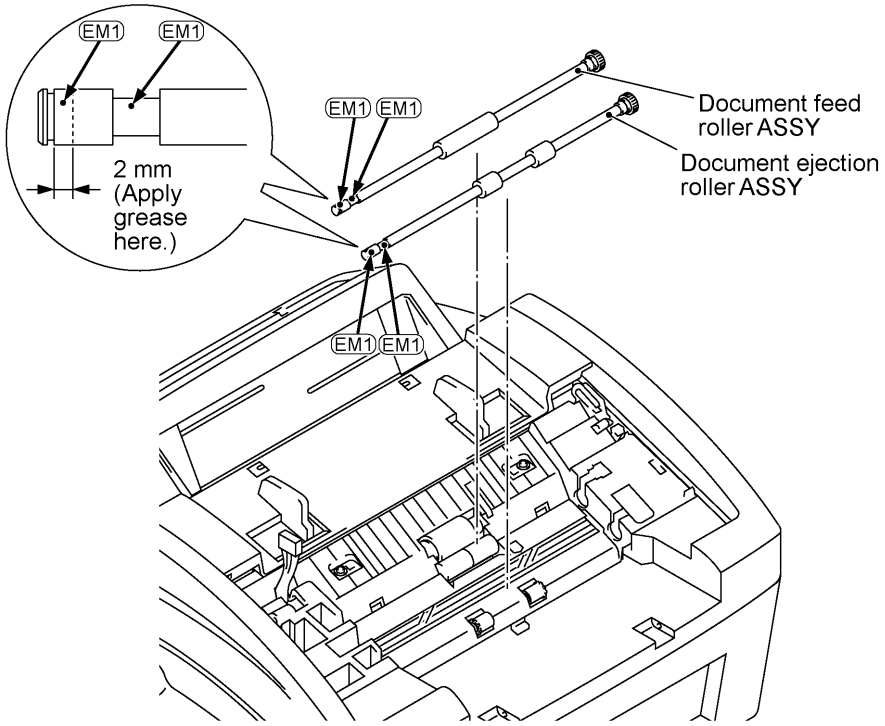


2. LUBRICATION

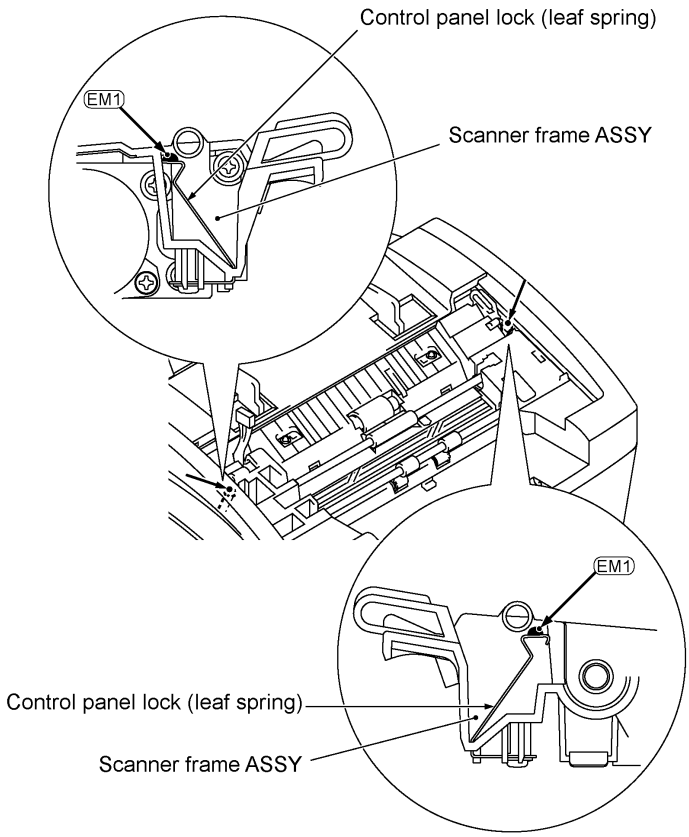
Apply the specified lubricants to the lubrication points as shown below.

Lubricant type (Manufacturer)	Lubricant amount		
	Thin coat of grease (1 mm^3)	Half of a rice-sized pinch of grease (3 mm^3)	Rice-sized pinch of grease (6 mm^3)
Molykote EM-30LG or EM-30L (Dow Corning)	(EM0.2)	(EM0.5)	(EM1)
Conductive grease FLOIL GE676 (Kanto Kasei Ltd.)	———	———	(GE1)

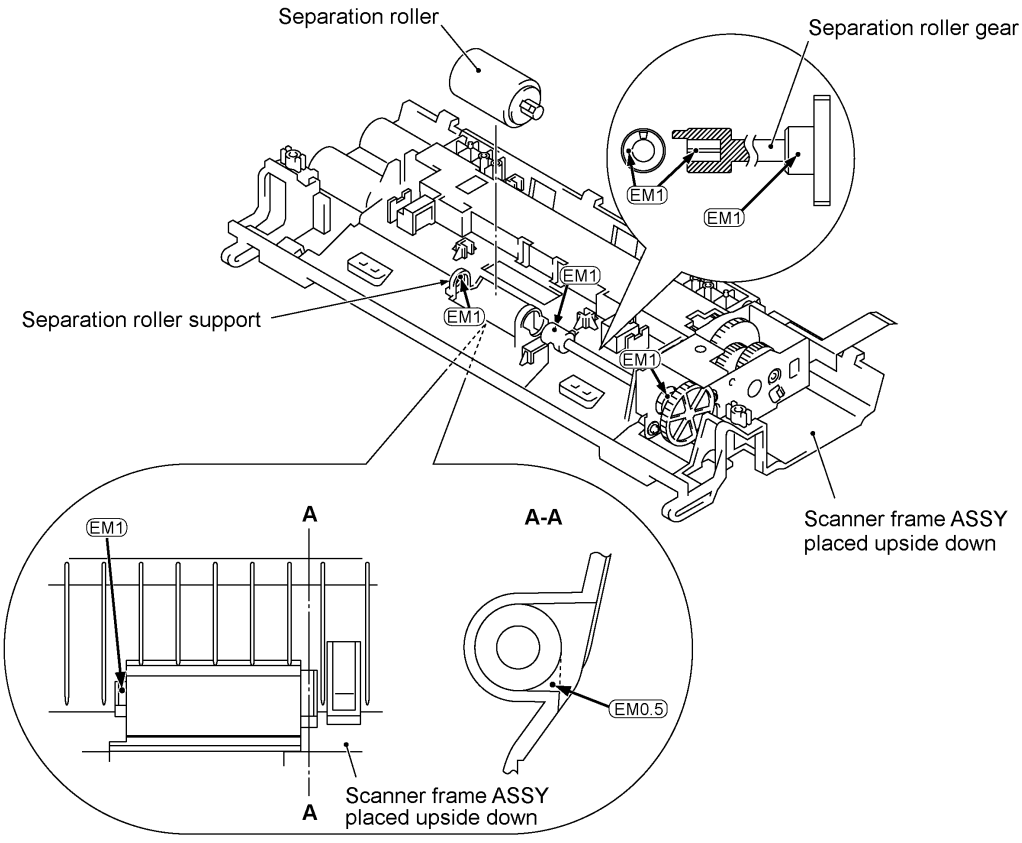
[1] Document feed roller ASSY and document ejection roller ASSY



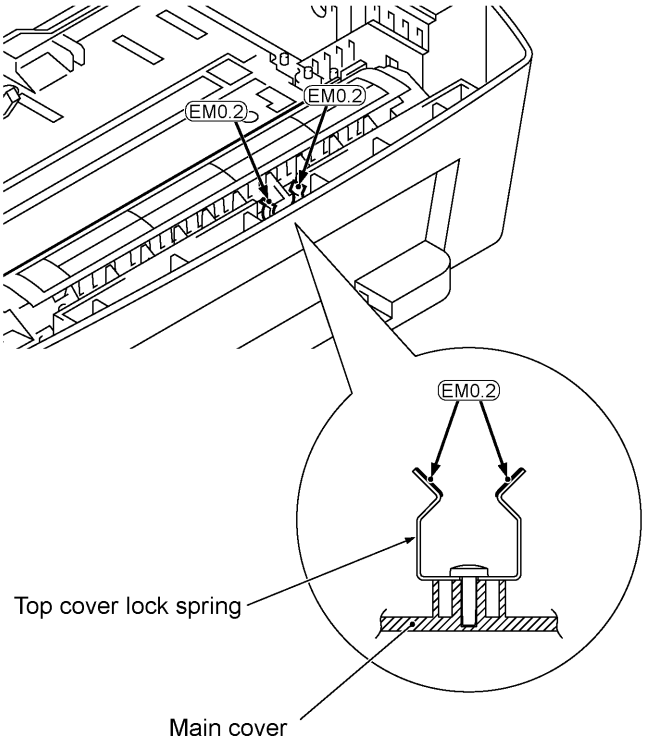
[2] Control panel locks



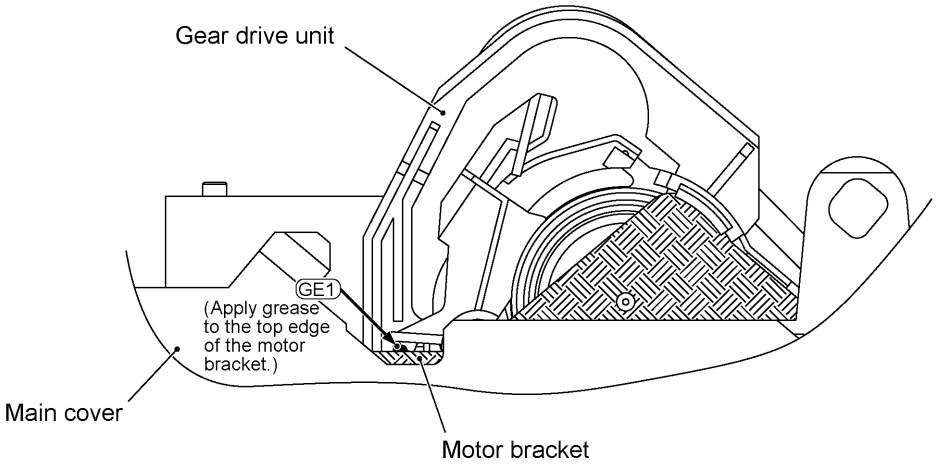
[3] Scanner frame ASSY and separation roller gear



[4] Top cover lock spring



[5] Gear drive unit



CHAPTER V.

MAINTENANCE MODE

CONTENTS

1. ENTRY INTO THE MAINTENANCE MODE V-1
2. LIST OF MAINTENANCE-MODE FUNCTIONS V-2
3. DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS V-4
   - 3.1 EEPROM Parameter Initialization V-4
   - 3.2 Printout of Scanning Compensation Data V-5
   - 3.3 ADF Performance Test V-7
   - 3.4 Test Pattern 1 ..... V-8
   - 3.5 Firmware Switch Setting and Printout V-9
   - 3.6 Operational Check of LCD V-51
   - 3.7 Operational Check of Control Panel PCB V-51
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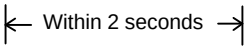
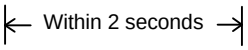
1. ENTRY INTO THE MAINTENANCE MODE

FAX2750/MFC4350/MFC4650/MFC6650MC: To make the equipment enter the maintenance mode, press the **Function**, *****, **2**, **8**, **6**, and **4** keys in this order.



FAX-8250P/MFC-9050/MFC-9550: To make the equipment enter the maintenance mode, press the **Menu**, *****, **2**, **8**, **6**, and **4** keys in this order.



The equipment beeps for approx. one second and displays " ▮▮ MAINTENANCE ▮▮▮ " on the LCD, indicating that it is placed in the initial stage of the maintenance mode, a mode in which the equipment is ready to accept entry from the keys.

To select one of the maintenance-mode functions listed in Section 2, enter the corresponding 2-digit function code with the numerical keys on the control panel. (The details of each maintenance-mode function are described in Section 3.)

NOTES:
- Pressing the **9** key twice in the initial stage of the maintenance mode makes the equipment exit from the maintenance mode, restoring it to the standby state.
- Pressing the **Stop** key after entering only one digit restores the equipment to the initial stage of the maintenance mode.
- If an invalid function code is entered, the equipment resumes the initial stage of the maintenance mode.

2. LIST OF MAINTENANCE-MODE FUNCTIONS

Maintenance-mode Functions

Function Code	Function	Reference Subsection (Page)
01	EEPROM Parameter Initialization	3.1 (V-4)
02	————	————
03	————	————
04	————	————
05	Printout of Scanning Compensation Data	3.2 (V-5)
06	————	————
07	————	————
08	ADF* Performance Test	3.3 (V-7)
09	Test Pattern 1	3.4 (V-8)
10	Firmware Switch Setting	3.5 (V-9)
11	Printout of Firmware Switch Data	3.5 (V-50)
12	Operational Check of LCD	3.6 (V-51)
13	Operational Check of Control Panel PCB (Check of Keys and Buttons)	3.7 (V-51)
14	————	————
15	————	————
32	Sensor Operational Check	3.8 (V-54)
55	CIS Scanner Area Setting	3.9 (V-55)
74	EEPROM Customizing	3.10 (V-55)
82	Equipment Error Code Indication	3.11 (V-56)
87	Output of Transmission Log to the Telephone Line	3.12 (V-56)
91	EEPROM Parameter Initialization (except the telephone number storage area)	3.1 (V-4)
99	Exit from the Maintenance Mode	---- (V-1)

* ADF: Automatic document feeder

---------- **IMPORTANT** ----------

Basically, the maintenance-mode functions listed on the previous page should be accessed by service personnel only. However, you may allow end users to access some of these under the guidance of service personnel (e.g., by telephone).

The user-accessible functions (codes 10, 11, 12, 82, 87 and 91) are shaded in the table given on the previous page. Function code 10 accesses the firmware switches WSW01 to WSW36, each of which has eight selectors. You should not allow end users to access all of those selectors, but you may allow them to access user-accessible selectors which are shaded in the firmware switch tables in Subsection 3.5.

The service personnel should instruct end users to follow the procedure given below.

(1) FAX2750/MFC4350/MFC4650/MFC6650MC: Press the **Function** and **Mode** keys in this order.

FAX-8250P/MFC-9050/MFC-9550: Press the **Menu** and **Mode** keys in this order.

The LCD clears the current display.

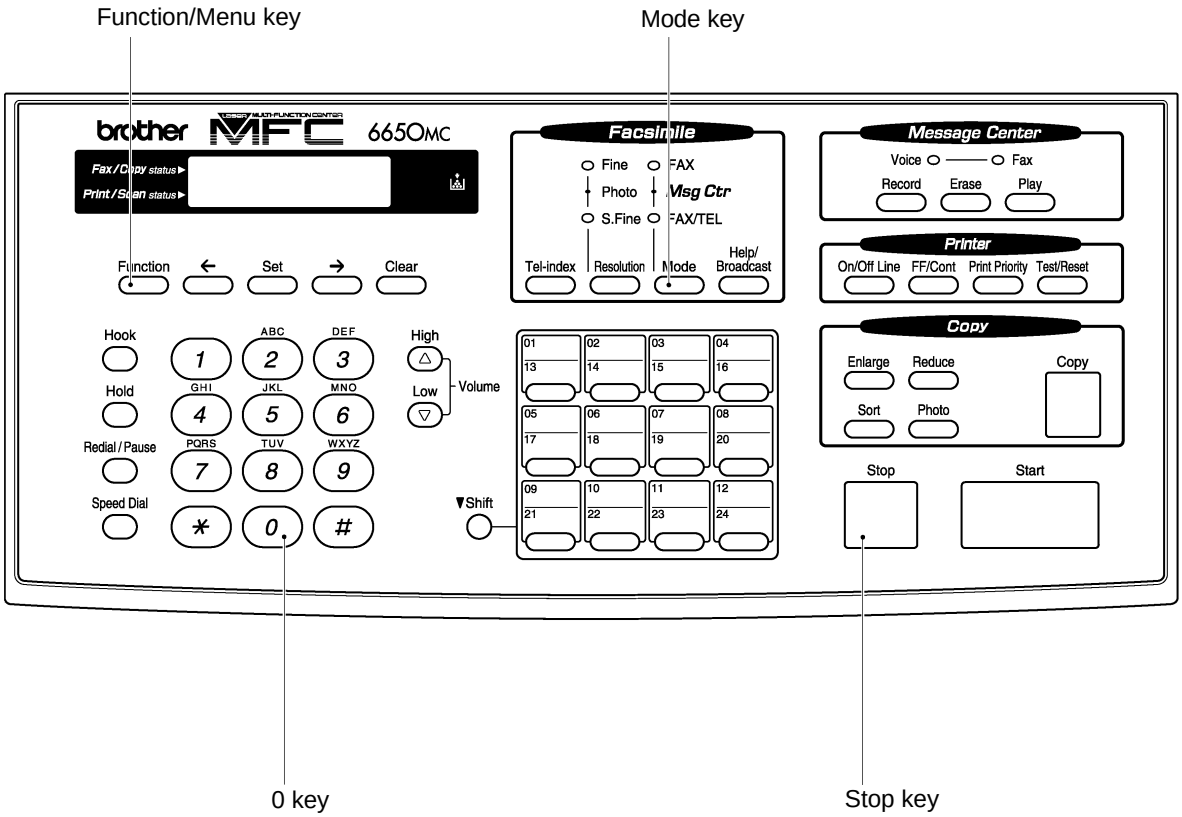
NOTE: The **Mode** key is inoperable during standby for redialing and timer.

(2) Press the **0** key.

(3) Enter the desired function code (10, 11, 12, 82, 87, or 91) with the numerical keys.

For function code 10, access the desired firmware switch according to the operating procedure described in Subsection 3.5.

(4) To make the equipment return to the standby state, press the **Stop** key.



3. DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS

3.1 EEPROM Parameter Initialization

Function

The equipment initializes the parameters, user switches, and firmware switches registered in the EEPROM, to the initial values. Entering the function code 01 initializes all of the EEPROM areas, but entering 91 does not initialize some areas, as listed below.

<table>
<tr><th>Data item \ Function code</th><th>01</th><th>91</th></tr>
<tr><td>Maintenance-mode functions
User switches
Firmware switches
Remote activation code
Activity report</td><td rowspan="2">All of these will be initialized</td><td>These will be initialized</td></tr>
<tr><td>Station ID data
Outside line number
Telephone function registration
One-touch dialing
Speed dialing
Group dialing</td><td>These will <u>not</u> be initialized</td></tr>
<tr><td>EEPROM customizing code (4-digit)</td><td colspan="2">This will <u>not</u> be initialized.
(Note that the first digit of the 4-digit code will be initialized to "0." If the code is <u>1</u>001, for example, it will be initialized to <u>0</u>001.)</td></tr>
</table>

NOTE: If you replace the main PCB with one used for other facsimile equipment, carry out this procedure and then customize the EEPROM (maintenance-mode function code 74 in Section 3.10).

Operating Procedure

(1) Press the **0** and **1** keys (or the **9** and **1** keys according to your need) in this order in the initial stage of the maintenance mode.

The "PARAMETER INIT" will appear on the LCD.

(2) Upon completion of parameter initialization, the equipment returns to the initial stage of the maintenance mode.

3.2 Printout of Scanning Compensation Data

Function

The equipment prints out the white and black level data for scanning compensation.

Operating Procedure

Do not start this function merely after powering on the equipment but start it after carrying out a sequence of scanning operation. Unless the equipment has carried out any scanning operation, this function cannot print out correct scanning compensation data. This is because at the start of scanning operation, the equipment initializes white and black level data and takes in the scanning compensation reference data.

(1) Press the **0** and **5** keys in this order in the initial stage of the maintenance mode.

The "WHITE LEVEL 1" will appear on the LCD.

(2) The equipment prints out the scanning compensation data list containing the following:

a) 2-value quantization white level data (208 bytes)
b) 2-value quantization black level data (1 byte)
c) LED light intensity value, 2-value quantization LED light intensity value, and photo mode LED light intensity value (3 bytes)
d) 2-value quantization A/D-high and photo-mode A/D-high values (2 bytes)
e) Compensation data for background color (1 byte)

(3) Upon completion of recording of the compensation data list, the equipment returns to the initial stage of the maintenance mode.

NOTE: When the equipment prints monochrome images after monochrome scanning, only the green data is valid.

NOTE: If any data is abnormal, its code will be printed in inline style, as shown on the next page.

```
8890 : DA DC E9 F5 F0 EE F7 F0  EE F5 F2 EC E9 E9 E5 E5
88A0 : E9 F2 EE E5 E0 DE DA DA  E3 E3 E3 E0 DC DA DA DA
88B0 : DA E0 DC DC DC D8 DA DC  E3 E9 E3 DE DA D8 D5 DA
88C0 : E0 E5 E9 E7 DE DA DA DE  DC EA E3 E1 DC DC E0 FF
88D0 : FF FF D8 36 31 2F 2F 2F  2D 33 2F 2D 31 2F 2F 2D
88E0 : 2D 31 2D 2D 2F 2F 2D 2D  2C 2D 2F 2C 2D 2D 2C 2D
88F0 : 2D 2F 2D 2D 2F 2F 2F 2D  2C 2D 2F 2F BD DA DC DE
8900 : E5 D6 CF C4 CD D8 DA DC  E1 DE E0 DA DA DA DC E0
8910 : E3 DE DA D8 D6 D8 E1 EA  EE E3 DE D5 D8 DA DE E1
8920 : F0 E7 E1 DC DA E0 E5 EA  F4 F4 EE E5 E9 F2 F7 FB
8930 : FF F7 F7 E5 EE F7 F7 F7  F7 EC F0 EA F0 F7 F5 F5
8940 : F5 F9 F5 F2 F2 F9 FF FF  FF F9 F7 F2 F4 FB FD FD
8950 : FF F7 F7 F7 F7 FF FF FB  FD F9 F7 F7 F9 FD FF FD

8890 : 2C

8890 : 1F 2A 00

8890 : 28 00

8890 : 00
```

Scanning Compensation Data List

3.3 ADF Performance Test

Function

The equipment counts the documents fed by the automatic document feeder (ADF) and displays the count on the LCD for checking the ADF performance.

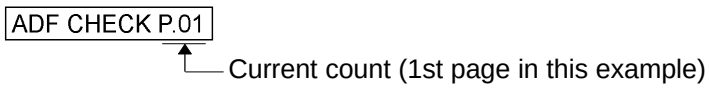
Operating Procedure

(1) Set documents. (Allowable up to the ADF capacity.)

The "DOC. READY" will appear on the LCD.

(2) Press the **0** and **8** keys in this order.

While counting the documents, the equipment feeds them in and out, displaying the current count on the LCD as shown below.



(3) After showing the final count, the equipment beeps for one second. To return the equipment to the initial stage of the maintenance mode, press the **Stop** key.

3.4 Test Pattern 1

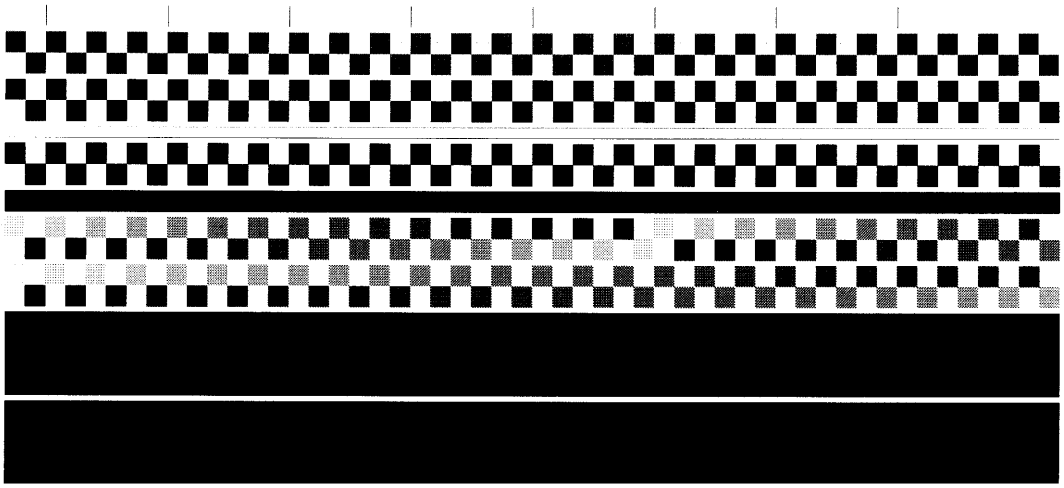
Function

This function, much like the copying function, prints out test pattern 1 to allow the service personnel to check for record data missing or print quality.

Operating Procedure

Press the **0** and **9** keys in this order in the initial stage of the maintenance mode.

The figure below shows test pattern 1.



Test Pattern 1

3.5 Firmware Switch Setting and Printout

[A] Firmware switch setting

Function

The facsimile equipment incorporates the following firmware switch functions (WSW01 through WSW36) which may be activated with the procedures using the control panel keys and buttons. The firmware switches have been set at the factory in conformity to the communications standards and codes of each country. Do not disturb them unless necessary. Some firmware switches may not be applicable in some versions. The firmware switch data list indicates "Not used." for those inapplicable switches.

Firmware Switches (WSW01 through WSW36)

WSW No.	Function	Reference Page
WSW01	Dial pulse setting	V-11
WSW02	Tone signal setting	V-12
WSW03	PABX mode setting	V-13
WSW04	TRANSFER facility setting	V-15
WSW05	1st dial tone and busy tone detection	V-16
WSW06	**Pause** key setting and 2nd dial tone detection	V-18
WSW07	Dial tone setting 1	V-20
WSW08	Dial tone setting 2	V-21
WSW09	Protocol definition 1	V-22
WSW10	Protocol definition 2	V-23
WSW11	Busy tone setting	V-24
WSW12	Signal detection condition setting	V-25
WSW13	Modem setting	V-26
WSW14	AUTO ANS facility setting	V-27
WSW15	REDIAL facility setting	V-28
WSW16	Function setting 1	V-29
WSW17	Function setting 2	V-30
WSW18	Function setting 3	V-31
WSW19	Transmission speed setting	V-32
WSW20	Overseas communications mode setting	V-33
WSW21	TAD setting 1	V-34
WSW22	ECM and caller ID setting	V-35
WSW23	Communications setting	V-36
WSW24	TAD setting 2	V-37
WSW25	TAD setting 3	V-38
WSW26	Function setting 4	V-39
WSW27	Function setting 5	V-40
WSW28	Function setting 6	V-41
WSW29	Function setting 7	V-42
WSW30	Function setting 8	V-43
WSW31	Function setting 9	V-44
WSW32	Function setting 10	V-45
WSW33	Function setting 11	V-46
WSW34	Function setting 12	V-47
WSW35	Function setting 13	V-48
WSW36	Function setting 14	V-49

Operating Procedure

(1) Press the **1** and **0** keys in this order in the initial stage of the maintenance mode.

The equipment displays the "WSW00" on the LCD and becomes ready to accept a firmware switch number.

(2) Enter the desired number from the firmware switch numbers (01 through 36).

The following appears on the LCD:

WSWXX = 0 0 0 0 0 0 0 0

(3) Use the ◀ and ▶ keys to move the cursor to the selector position to be modified.

(4) Enter the desired number using the **0** and **1** keys.

(5) Press the **Set** key. This operation saves the newly entered selector values onto the EEPROM and readies the equipment for accepting a firmware switch number.

(6) Repeat steps (2) through (5) until the modification for the desired firmware switches is completed.

(7) Press the **Set** or **Stop** key to return the equipment to the initial stage of the maintenance mode.

NOTES:
- To cancel this operation and return the equipment to the initial stage of the maintenance mode during the above procedure, press the **Stop** key.
- If there is a pause of more than one minute after a single-digit number is entered for double-digit firmware switch numbers, the equipment will automatically return to the initial stage of the maintenance mode.

Note

The user-accessible selectors of the firmware switches are shaded in the tables given on the following pages.

Detailed Description for the Firmware Switches

WSW01 (Dial pulse setting)

Selector No.	Function	Setting and Specifications
1 2	Dial pulse generation mode	No. 1 2 0 0 : N 0 1 : N+1 1 0 : 10-N 1 1 : N
3 4	Break time length in pulse dialing	No. 3 4 0 0 : 60 ms 0 1 : 67 ms 1 0 : 40 ms (for 16 PPS) 1 1 : 64 ms (at 106-ms intervals)
5 6	Inter-digit pause	No. 5 6 0 0 : 800 ms 0 1 : 850 ms 1 0 : 950 ms 1 1 : 600 ms
7	Switching between pulse (DP) and tone (PB) dialing, by the function switch	0: Yes 1: No
8	Default dialing mode, pulse (DP) or tone (PB) dialing	0: PB 1: DP

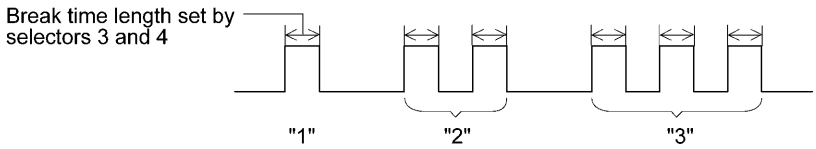
- **Selectors 1 and 2: Dial pulse generation mode**

  These selectors set the number of pulses to be generated in pulse dialing.

  N: Dialing "N" generates "N" pulses. (Dialing "0" generates 10 pulses.)
  N + 1: Dialing "N" generates "N + 1" pulses.
  10 - N: Dialing "N" generates "10 - N" pulses.

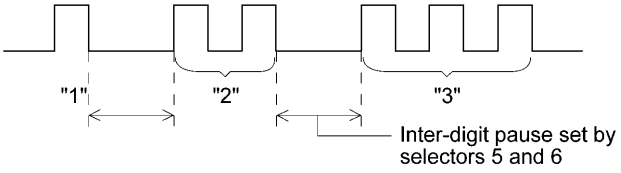
- **Selectors 3 and 4: Break time length in pulse dialing**

  These selectors set the break time length in pulse dialing.
  (Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)



- **Selectors 5 and 6: Inter-digit pause**

  These selectors set the inter-digit pause in pulse dialing.
  (Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)



- **Selector 7: Switching between pulse (DP) and tone (PB) dialing, by the function switch**

  This selector determines whether or not the dialing mode may be switched between the pulse (DP) and tone (PB) dialing by using the function switch.

- **Selector 8: Default dialing mode, pulse (DP) or tone (PB) dialing**

  This selector sets the default dialing mode (pulse dialing or tone dialing) which may be changed by the function switch. If the user switches it with the function switch when selector 7 is set to "0," the setting specified by this selector will also be switched automatically.

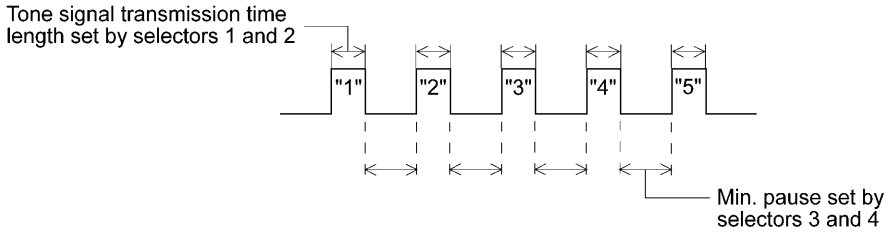
WSW02 (Tone signal setting)

Selector No.	Function	Setting and Specifications
1 2	Tone signal transmission time length	No. 1 2 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 100 ms
3 4	Min. pause in tone dialing	No. 3 4 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 140 ms
5 | 8	Attenuator for pseudo ring backtone to the line (selectable in the range of 0-15 dB)	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

- **Selectors 1 through 4: Tone signal transmission time length and Min. pause in tone dialing**

  These selectors set the tone signal transmission time length and minimum pause in tone dialing.

  (Example: If "1," "2," "3," "4," and "5" are dialed.)



- **Selectors 5 through 8: Attenuator for pseudo ring backtone to the line**

  These selectors are used to adjust the sound level of beep generated as a ring backtone in the F/T mode or as a signal during remote control operation or at the start of ICM recording.

  Setting two or more selectors to “1” produces addition of attenuation assigned to each selector.

WSW03 (PABX* mode setting)

Selector No.	Function	Setting and Specifications
1	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
2 | 4	Min. detection time length of PABX* dial tone, required for starting dialing	No. 2 3 4 0 0 0 : 50 ms 0 0 1 : 210 ms 0 1 0 : 500 ms 0 1 1 : 800 ms 1 0 0 : 900 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
5	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
6 7	Dial tone detection in PABX*	No. 6 7 0 0 : No detection (3.5 sec. WAIT) 0 1 : No detection (5 sec. WAIT) 1 0 : No detection (7 sec. WAIT) 1 1 : Detection (Frequency only)
8	"R" key function	0: 1st dial tone detection add 1: No 1st dial tone detection

* PABX: Private automatic branch exchange

NOTE: Selectors 2 through 4 and 6 through 8 are not applicable where no PABX is installed.

- **Selectors 1 and 5: CNG detection when sharing a modular wall socket with a telephone**

  These selectors determine whether or not the equipment detects a CNG signal when a line is connected to a telephone sharing a modular wall socket with the equipment. Upon detection of CNG signals by the number of cycles specified by these selectors, the equipment interprets CNG as an effective signal and then starts FAX reception.

Selector No. 1	Selector No. 5	Cycle
0 (A)	0 (A)	0.5 cycle
0 (A)	1 (B)	1.0 cycle
1 (B)	0 (A)	1.5 cycles
1 (B)	1 (B)	2.0 cycles

- **Selectors 2 through 4: Min. detection time length of PABX dial tone, required for starting dialing**

  Upon detection of the PABX dial tone for the time length set by these selectors, the equipment starts dialing.

  These selectors are effective only when both selectors 6 and 7 are set to "1" (Detection).

- **Selectors 6 and 7: Dial tone detection in PABX**

  These selectors activate or deactivate the dial tone detection function which detects a dial tone when a line is connected to the PABX.

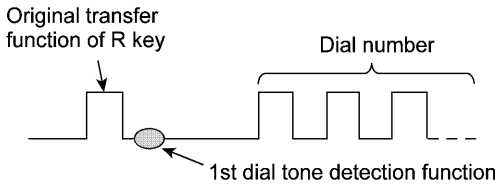
  Setting both of these selectors to "1" activates the dial tone detection function so that the equipment starts dialing upon detection of a dial tone when a line is connected.

  Other setting combinations deactivate the dial tone detection function so that the equipment starts dialing after the specified WAIT (3.5, 5.0, or 7.0 sec.) without detection of a dial tone when a line is connected.

- **Selector 8: "R" key function**

  This selector determines whether or not the 1st dial tone detection function (specified by selectors 1 through 3 of WSW05) is added to the R key.

  If this selector is set to "0," pressing the R key automatically activates the 1st dial tone detection function when the PABX and the automatic calling are selected by using the function switch. If you press the R key and a dial number in succession, the equipment will automatically carry out the 1st dial tone detection function following the original transfer function as shown below.



WSW04 (TRANSFER facility setting)

Selector No.	Function	Setting and Specifications
1	Earth function in transfer facility	0: Provided 1: Not provided
2 3	Dual tone detection frequency in ICM recording	No. 2 3 0 0 : 350 and 440 Hz (A) 0 1 : 440 and 480 Hz (B) 1 x : 480 and 620 Hz (C)
4	Tone detection sensitivity in ICM recording	0: OFF 1: High
5 6	Earth time length for earth function	No. 5 6 0 0 : 200 ms 0 1 : 300 ms 1 0 : 500 ms 1 1 : 700 ms
7 8	Break time length for flash function	No. 7 8 0 0 : 80 ms 0 1 : 110 ms 1 0 : 250 ms 1 1 : 500 ms

NOTE: Selectors 1 and 5 through 8 are not applicable in those countries where no transfer facility is supported.

NOTE: Selectors 2 through 4 are applicable to those models equipped with a built-in TAD.

- **Selector 1: Earth function in transfer facility**

  This selector determines whether or not the earth function is added to the transfer setting menu to be accessed by the function switch.

- **Selectors 2 and 3: Dual tone detection frequency in ICM recording**

  If the equipment detects both of the frequencies set by these selectors in ICM recording, it will disconnect the line. For example, if these selectors are set to "0, 0," the equipment will disconnect the line upon detection of 350 Hz and 440 Hz.

- **Selectors 4: Tone detection sensitivity in ICM recording**

  Setting this selector to "1" increases the tone detection sensitivity in ICM recording.

- **Selectors 5 and 6: Earth time length for earth function**

  These selectors set the short-circuiting time length of the telephone line (La or Lb) to ground.

  This setting is effective only when the earth function is selected for the R key by using the function switch.

- **Selectors 7 and 8: Break time length for flash function**

  These selectors set the break time length.

  This setting is effective only when the flash function is selected for the R key by using the function switch.

WSW05 (1st dial tone and busy tone detection)

Selector No.	Function	Setting and Specifications
1 | 3	1st dial tone detection	No. 1 2 3 0 0 0 : 3.5 sec. WAIT 0 0 1 : 7.0 sec. WAIT 0 1 0 : 10.5 sec. WAIT 0 1 1 : 14.0 sec. WAIT 1 0 0 : 17.5 sec. WAIT 1 0 1 : 21.0 sec. WAIT 1 1 0 : 24.5 sec. WAIT 1 1 1 : Detection (Without WAIT)
4	Max. pause time allowable for remote ID code detection	0 : 2 seconds 1: 1 second
5 6	Busy tone detection in automatic sending mode	No. 5 6 0 0 : No detection 0 1 : Detection only after dialing 1 0 : No detection 1 1 : Detection before and after dialing
7	Busy tone detection in automatic receiving mode	0 : Yes 1: No
8	Not used.	

NOTE: Selectors 5 through 7 are not applicable in those countries where no busy tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: 1st dial tone detection**

  These selectors activate or deactivate the 1st dial tone detection function which detects the 1st dial tone issued from the PSTN when a line is connected to the PSTN.

  Setting all of these selectors to "1" activates the dial tone detection function so that the equipment starts dialing upon detection of a dial tone when a line is connected. (However, in those countries which support no dial tone detection function, e.g., in the U.S.A., setting these selectors to "1" makes the equipment start dialing after a WAIT of 3.5 seconds.) For the detecting conditions of the 1st dial tone, refer to WSW07 and WSW08.

  Other setting combinations deactivate the dial tone detection function so that the equipment starts dialing after the specified WAIT (3.5, 7.0, 10.5, 14.0, 17.5, 21.0, or 24.5 seconds) without detection of a dial tone when a line is connected to the PSTN.

- **Selector 4: Max. pause time allowable for remote ID code detection**

  This selector sets the maximum pause time allowable for detecting the second digit of a remote ID code after detection of the first digit in remote reception.

  If selector 4 is set to "0" (2 seconds), for instance, only a remote ID code whose second digit is detected within 2 seconds after detection of the first digit will become effective so as to activate the remote function.

- **Selectors 5 and 6: Busy tone detection in automatic sending mode**

  These selectors determine whether or not the equipment automatically disconnects a line upon detection of a busy tone in automatic sending mode.

  Setting selector 6 to "0" ignores a busy tone so that the equipment does not disconnect the line.

  Setting selectors 5 and 6 to "0" and "1," respectively, makes the equipment detect a busy tone only after dialing and disconnect the line.

  Setting both of selectors 5 and 6 to "1" makes the equipment detect a busy tone before and after dialing and then disconnect the line.

- **Selector 7: Busy tone detection in automatic receiving mode**

  This selector determines whether or not the equipment automatically disconnects a line upon detection of a busy tone in automatic receiving mode.

WSW06 (Pause key setting and 2nd dial tone detection)

Selector No.	Function	Setting and Specifications
1 | 3	**Pause** key setting and 2nd dial tone detection	No. 1 2 3 0 0 0 : No pause 0 0 1 : 3.5 sec. WAIT 0 1 0 : 7 sec. WAIT 0 1 1 : 10.5 sec. WAIT 1 0 0 : 14 sec. WAIT 1 1 0 : 2nd dial tone detection only in pulse dialing (DP) system 1 0 1 : 2nd dial tone detection both in DP and push-button (PB) dialing system 1 1 1 :
4 | 6	Detection of international tone	No. 4 5 6 0 0 0 : 50 ms 0 0 1 : 210 ms 0 1 0 : 500 ms 0 1 1 : 800 ms 1 0 0 : 900 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
7	No. of 2nd dial tone detection times	0: Once 1: Twice
8	2nd dial tone interrupt detecting time	0: 30 ms 1: 50 ms

NOTE: Selectors 4 through 8 are not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: Pause key setting and 2nd dial tone detection**

Selectors 1	2	3	
0	0	0	No WAIT is inserted even if the **Pause** key is pressed.
0	0	1	If you press the **Pause** key during dialing, the facsimile equipment will insert WAIT as defined in the above table. If the **Pause** key is pressed repeatedly, the equipment inserts the specified WAIT multiplied by the number of depressions. It applies also in hook-up dialing.
0	1	0	
0	1	1	
1	0	0	
1	0	1	When these selectors are set to "1, 0, 1": If you press the **Pause** key during dialing, the equipment will wait for the 2nd dial tone to be sent via the communications line. When these selectors are set to "1, 1, 0" or "1, 1, 1": If you press the **Pause** key during dialing, the equipment will first wait for the 2nd dial tone to be sent via the communications line. After that, the equipment will insert a WAIT of 3.5 seconds. If no 2nd dial tone is received within the specified time length (set by WSW08), the equipment will disconnect the line if in automatic dialing, or it will start transmitting the dial signal if given after depression of the **Pause** key in hook-up dialing. (In those countries where no dial tone detection function is supported, setting these selectors to "1, 0, 1," "1, 1, 0," or "1, 1, 1" inserts a WAIT of 3.5 seconds.)
1	1	0	
1	1	1	

- **Selectors 4 through 6: Detection of international tone**

  Upon detection of the 2nd dial tone for the time length specified by these selectors, the equipment starts dialing.

  This setting is effective only when the 2nd dial tone detection function is activated by selectors 1 through 3 (Setting 101, 110, or 111).

  This function does not apply in those countries where no dial tone detection function is supported.

- **Selector 7: No. of 2nd dial tone detection times**

  This selector sets the number of dial tone detection times required for starting dialing.

- **Selector 8: 2nd dial tone interrupt detecting time**

  This selector sets the allowable time length of an interrupt which should not be interpreted as an interrupt in the 2nd tone dialing.

WSW07 (Dial tone setting 1)

Selector No.	Function	Setting and Specifications
1 2	Frequency band range	No. 1 2 0 0 : Narrows by 10 Hz 0 1 : Initial value 1 X : Widens by 10 Hz
3	Line current detection	0: No 1: Yes
4 | 6	2nd dial tone detection level (Z = 600 Ω)	No. 4 5 6 0 0 0 : -21 dBm 0 0 1 : -24 dBm 0 1 0 : -27 dBm 0 1 1 : -30 dBm 1 0 0 : -33 dBm 1 0 1 : -36 dBm 1 1 0 : -39 dBm 1 1 1 : -42 dBm
7	1st dial tone interrupt detecting time	0: 30 ms 1: 50 ms
8	Not used.	

NOTE: Selectors 1, 2, 4 through 7 are not applicable in those countries where no dial tone or line current detection is supported, e.g., U.S.A.

- Selectors 1 and 2: Frequency band range

  These selectors set the frequency band for the 1st dial tone and the busy tone (before dialing) to be detected.

  This setting is effective only when selectors 1 through 3 of WSW05 are set to “1,1,1.”

- **Selector 3: Line current detection**

  This selector determines whether or not the equipment should detect a line current before starting dialing.

- **Selectors 4 through 6: 2nd dial tone detection level**

  These selectors set the detection level of the 2nd dial tone.

- **Selector 7: 1st dial tone interrupt detecting time**

  This selector sets the allowable time length of an interrupt which should not be interpreted as an interrupt in the 1st dial tone dialing.

WSW08 (Dial tone setting 2)

Selector No.	Function	Setting and Specifications
1 | 3	1st dial tone detection time length	No. 1 2 3 0 0 0 : 50 ms 0 0 1 : 210 ms 0 1 0 : 500 ms 0 1 1 : 800 ms 1 0 0 : 900 ms 1 0 1 : 1.5 sec. 1 1 0 : 2.0 sec. 1 1 1 : 2.5 sec.
4 5	Time-out length for 1st and 2nd dial tone detection	No. 4 5 0 0 : 10 sec. 0 1 : 20 sec. 1 0 : 15 sec. 1 1 : 30 sec.
6 | 8	Detection level of 1st dial tone and busy tone before dialing	No. 6 7 8 0 0 0 : -21 dBm 0 0 1 : -24 dBm 0 1 0 : -27 dBm 0 1 1 : -30 dBm 1 0 0 : -33 dBm 1 0 1 : -36 dBm 1 1 0 : -39 dBm 1 1 1 : -42 dBm

NOTE: The WSW08 is not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: 1st dial tone detection time length**

  Upon detection of the 1st dial tone for the time length set by these selectors, the equipment starts dialing.

  This setting is effective only when selectors 1 through 3 of WSW05 are set to “1,1,1.”

- **Selectors 4 and 5: Time-out length for 1st and 2nd dial tone detection**

  These selectors set the time-out length for the 1st and 2nd dial tone detection so that the equipment waits dial tone input for the specified time length and disconnects itself from the line when no dial tone is inputted.

WSW09 (Protocol definition 1)

Selector No.	Function	Setting and Specifications
1	Frame length selection	0: 256 octets 1: 64 octets
2	Use of non-standard commands	0: Allowed 1: Prohibited
3 4	No. of retries	No. 3 4 0 0 : 4 times 0 1 : 3 times 1 0 : 2 times 1 1 : 1 time
5	T5 timer	0: 300 sec. 1: 60 sec.
6	T1 timer	0: 35 sec. 1: 40 sec.
7 8	Elapsed time for time-out control for no response from the called station in automatic sending mode	No. 7 8 0 0 : 60 sec. 0 1 : 140 sec. (in the French versions) 70 sec. (in other versions) 1 0 : 90 sec. 1 1 : 35 sec.

NOTE: Selectors 1 through 6 are not applicable in those models which do not support ECM.

- **Selector 1: Frame length selection**

  Usually a single frame consists of 256 octets (1 octet = 8 bits). For communications lines with higher bit error rate, however, set selector 1 to "1" so that the facsimile equipment can divide a message into 64-octet frames.

  Remarks: The error correction mode (ECM) is a facsimile transmission manner in which the equipment divides a message into frames for transmission so that if any data error occurs on the transmission line, the equipment retransmits only those frames containing the error data.

- **Selector 2: Use of non-standard commands**

  If this selector is set to "0," the equipment may use non-standard commands (the machine's native-mode commands, e.g., NSF, NSC, and NSS) for communications. If it is set to "1," the equipment will use standard commands only.

- **Selectors 3 and 4: No. of retries**

  These selectors set the number of retries in each specified modem transmission speed.

- **Selector 5: T5 timer**

  This selector sets the time length for the T5 timer.

- **Selector 6: T1 timer**

  This selector sets the time length for the T1 timer.

- **Selectors 7 and 8: Elapsed time for time-out control**

  If the equipment receives no response (no G3 command) from the called terminal in automatic sending during the time set by these selectors, it disconnects the line.

WSW10 (Protocol definition 2)

Selector No.	Function		Setting and Specifications
1	Switching of DPS, following the CML ON/OFF		0: No 1: Yes
2	Time length from transmission of the last dial digit to CML ON		0: 100 ms 1: 50 ms
3	Time length from CML ON to CNG transmission		0: 2 sec. 1: 4 sec.
4	Time length from CML ON to CED transmission (except for facsimile-to-telephone switching)		0: 0.5 sec. 1: 2 sec.
5 6	No. of training retries		No. 5 6 0 0 : 1 time 0 1 : 2 times 1 0 : 3 times 1 1 : 4 times
7	Encoding system (Compression)	MR	0: Allowed 1: Not allowed
8		MMR	0: Allowed 1: Not allowed

- **Selector 1: Switching of DPS, following the CML ON/OFF**

  Setting this selector to "1" automatically switches DPS following the CML ON/OFF operation.

- **Selector 2: Time length from transmission of the last dial digit to CML ON**

  This selector sets the time length from when the equipment transmits the last dial digit until the CML relay comes on.

- **Selector 3: Time length from CML ON to CNG transmission**

  This selector sets the time length until the equipment transmits a CNG after it turns on the CML relay.

- **Selector 4: Time length from CML ON to CED transmission**

  This selector sets the time length until the equipment transmits a CED after it turns on the CML relay. This setting does not apply to switching between facsimile and telephone.

- **Selectors 5 and 6: No. of training retries**

  These selectors set the number of training retries to be repeated before automatic fallback.

- **Selectors 7 and 8: Encoding system (Compression)**

  This selector determines whether or not use of the MR/MMR coding system will be allowed.

WSW11 (Busy tone setting)

Selector No.	Function	Setting and Specifications
1 2	Frequency band range	No. 1 2 0 0 : Narrows by 10 Hz 0 1 : Initial value 1 x : Widens by 10 Hz
3	Not used.	
4	ON/OFF time length ranges (More than one setting allowed)	1: 400-600/400-600 ms
5		1: 175-440/175-440 ms
6		1: 700-800/700-800 ms
7		1: 110-410/320-550 ms
8		1: 100-660/100-660 ms

NOTE: WSW11 is not applicable in those countries where no busy tone detection is supported.

NOTE: The setting of WSW11 is effective only when selectors 5 and 6 of WSW05 are set to "0, 1" or "1, 1" (Busy tone detection).

- **Selectors 1 and 2: Frequency band range**

  These selectors set the frequency band for busy tone to be detected.

- **Selectors 4 through 8: ON/OFF time length ranges**

  These selectors set the ON and OFF time length ranges for busy tone to be detected. If more than one selector is set to "1," the ranges become wider. For example, if selectors 4 and 5 are set to "1," the ON and OFF time length ranges are from 175 to 600 ms.

WSW12 (Signal detection condition setting)

Selector No.	Function	Setting and Specifications
1 2	Min. OFF time length of calling signal (Ci)	No. 1 2 0 0 : 300 ms (in the U.S.A. and Canadian versions) 1500 ms (in other versions) 0 1 : 500 ms 1 0 : 700 ms 1 1 : 900 ms
3 4	Max. OFF time length of calling signal (Ci)	No. 3 4 0 0 : 6 sec. 0 1 : 7 sec. 1 0 : 9 sec. 1 1 : 11 sec.
5 6	Detecting time setting	No. 5 6 0 0 : 800 ms (1000 ms*) 0 1 : 200 ms 1 0 : 250 ms 1 1 : 150 ms
7	Delay	0: Yes 1: No
8	Not used.	

*1000 ms in Chinese versions.

- **Selectors 1 through 4: Min. and max. OFF time length of calling signal (Ci)**

  If the equipment detects the OFF state of calling signal (Ci) for a time length which is greater than the value set by selectors 1 and 2 and less than the value set by selectors 3 and 4, it interprets the Ci signal as OFF.

- **Selectors 5 and 6: Detecting time setting**

  These selectors set the time length required to make the equipment acknowledge itself to be called. That is, if the equipment continuously detects calling signals with the frequency set by selectors 1 through 4 of WSW14 during the time length set by these selectors 5 and 6, it acknowledges the call.

- **Selector 7: Delay**

  Setting this selector to "0" allows the equipment to insert a 900 ms WAIT after acknowledgment of the call until the equipment turns on the CML relay to start receiving operation.

WSW13 (Modem setting)

Selector No.	Function	Setting and Specifications
1 2	Cable equalizer	No. 1 2 0 0 : 0 km 0 1 : 1.8 km 1 0 : 3.6 km 1 1 : 5.6 km
3 4	Reception level	No. 3 4 0 0 : -43 dBm 0 1 : -47 dBm 1 0 : -49 dBm 1 1 : -51 dBm
5 | 8	Modem attenuator	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

The modem should be adjusted according to the user's line conditions.

- **Selectors 1 and 2: Cable equalizer**

  These selectors are used to improve the pass-band characteristics of analogue signals on a line. (Attenuation in the high-band frequency is greater than in the low-band frequency.)

  Set these selectors according to the distance from the telephone switchboard to the facsimile equipment.

- **Selectors 3 and 4: Reception level**

  These selectors set the optimum receive signal level.

- **Selectors 5 through 8: Modem attenuator**

  These selectors are used to adjust the transmitting level of the modem when the reception level at the remote station is improper due to line loss. This function applies for G3 protocol signals.

  Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

  This setting will be limited if selector 8 of WSW23 is set to "0."

WSW14 (AUTO ANS facility setting)

Selector No.	Function	Setting and Specifications
1 2	Frequency band selection (Lower limit)	No. 1 2 0 0 : 13 Hz 0 1 : 15 Hz 1 0 : 23 Hz 1 1 : 20 Hz
3 4	Frequency band selection (Upper limit)	No. 3 4 0 0 : 30 Hz 0 1 : 55 Hz 1 X : 70 Hz
5 | 8	No. of rings in AUTO ANS mode	No. 5 6 7 8 0 0 0 0 : Fixed to once 0 0 0 1 : Fixed to 2 times 0 0 1 0 : Fixed to 3 times 0 0 1 1 : Fixed to 4 times 0 1 0 0 : 1 to 2 times 0 1 0 1 : 1 to 3 times 0 1 1 0 : 1 to 4 times 0 1 1 1 : 1 to 5 times 1 0 0 0 : 2 to 3 times 1 0 0 1 : 2 to 4 times 1 0 1 0 : 2 to 5 times 1 0 1 1 : 2 to 6 times 1 1 0 0 : 1 to 10 times 1 1 0 1 : 2 to 10 times 1 1 1 0 : 3 to 5 times 1 1 1 1 : 4 to 10 times

- **Selectors 1 through 4: Frequency band selection**

  These selectors are used to select the frequency band of calling signals for activating the AUTO ANS facility.

  In the French versions, if the user sets the PBX to OFF from the control panel, the setting made by selectors 1 and 2 will take no effect and the frequency's lower limit will be fixed to 32 Hz. (Even if the setting made by these selectors does not apply, it will be printed on the configuration list.)

- **Selectors 5 through 8: No. of rings in AUTO ANS mode**

  These selectors set the number of rings to initiate the AUTO ANS facility.

WSW15 (REDIAL facility setting)

Selector No.	Function	Setting and Specifications
1 2	Selection of redial interval	No. 1 2 0 0 : 5 minutes 0 1 : 1 minute 1 0 : 2 minutes 1 1 : 3 minutes
3 | 6	No. of redialings	No. 3 4 5 6 0 0 0 0 : 16 times 0 0 0 1 : 1 times 0 0 1 0 : 2 times 0 0 1 1 : 3 times | | 1 1 1 1 : 15 times
7	Redialing for no response sent from the called terminal	0: Redialing 1: No redialing
8	Not used.	

NOTE: Selector 7 is not applicable to the U.S.A., Belgian and Swiss versions.

- **Selectors 1 through 6: Selection of redial interval and No. of redialings**

  The equipment redials by the number of times set by selectors 3 through 6 at intervals set by selectors 1 and 2.

  This setting is effective only when selector 7 is set to "0."

- **Selectors 7: Redialing for no response sent from the called terminal**

  This selector determines whether or not the equipment redials if no G3 command response comes from the called station after dialing within the time length set by selectors 7 and 8 of WSW09.

WSW16 (Function setting 1)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	CCITT superfine recommendation	0: OFF 1: ON
3 | 6	Not used.	
7	Max. document length limitation	0: 400 cm 1: 90 cm
8	**Stop** key pressed during reception	0: Not functional 1: Functional

- **Selector 2: CCITT superfine recommendation**

  If this selector is set to "1," the equipment communicates in CCITT recommended superfine mode (15.4 lines/mm). If it is set to "0," it communicates in native superfine mode.

- **Selector 7: Max. document length limitation**

  This selector is used to select the maximum length of a document to be sent.

- **Selector 8: Stop key pressed during reception**

  If this selector is set to "1," pressing the **Stop** key can stop the current receiving operation. The received data will be lost.

WSW17 (Function setting 2)

Selector No.	Function	Setting and Specifications
1 2	Off-hook alarm	No. 1 2 0 0 : No alarm 0 1 : Always valid 1 X : Valid except when 'call reservation' is selected.
3	Power failure report output	0: ON 1: OFF
4	Calendar clock/prompt alternate display	0: No 1: Yes
5	Calendar clock type	0: U.S.A. type 1: European type
6	Not used.	
7	Non-ring reception	0: OFF 1: ON
8	Not used.	

NOTE: Selector 4 is not applicable to those models having a 2-row LCD.

- **Selectors 1 and 2: Off-hook alarm**

  These selectors activate or deactivate the alarm function which sounds an alarm when the communication is completed with the handset being off the hook.

- **Selector 3: Power failure report output**

  This selector determines whether or not the equipment outputs a power failure report when the power comes back on.

- **Selector 4: Calendar clock/prompt alternate display**

  If this selector is set to "1," the calendar clock and the prompt "INSERT DOCUMENT" appear alternately on the LCD while the equipment is on standby; if it is set to "0," only the calendar clock appears.

- **Selector 5: Calendar clock type**

  If this selector is set to "0" (USA), the MM/DD/YY hh:mm format applies; if it is set to "1" (Europe), the DD/MM/YY hh:mm format applies: DD is the day, MM is the month, YY is the last two digits of the year, hh is the hour, and mm is the minute.

- **Selector 7: Non-ring reception**

  Setting this selector to "1" makes the equipment receive calls without ringer sound if the ring delay is set to 0.

WSW18 (Function setting 3)

Selector No.	Function	Setting and Specifications
1	Not used.	
2 3	Detection enabled time for CNG and no tone	No. 2 3 0 0 : 40 sec. 0 1 : 0 sec. (No detection) 1 0 : 5 sec. 1 1 : 80 sec.
4 5	Not used.	
6	Registration of station ID	0: Permitted 1: Prohibited
7 8	Tone sound monitoring	No. 7 8 0 X : No monitoring 1 0 : Up to phase B at the calling station only 1 1 : All transmission phases both at the calling and called stations

- **Selectors 2 and 3: Detection enabled time for CNG and no tone**

  After the line is connected via the external telephone or by picking up the handset of the facsimile equipment, the equipment can detect a CNG signal or no tone for the time length specified by these selectors. The setting specified by these selectors becomes effective only when selector 8 of WSW20 is set to "1."

- **Selector 6: Registration of station ID**

  Setting this selector to "0" permits the registration of station ID for Austrian and Czech versions.

- **Selectors 7 and 8: Tone sound monitoring**

  These selectors set monitoring specifications of the tone sound inputted from the line.

WSW19 (Transmission speed setting)

Selector No.	Function	Setting and Specifications
1 | 3	First transmission speed choice for fallback	No. 1 2 3 No. 4 5 6 0 0 0 : 2,400 bps 0 0 1 : 4,800 bps 0 1 0 : 7,200 bps 0 1 1 : 9,600 bps 1 0 0 : 12,000 bps * 1 0 1 : 1 1 0 : 14,400 bps * 1 1 1 :
4 | 6	Last transmission speed choice for fallback	
7	Not used.	
8	V. 17 mode	0: Permitted 1: Prohibited

* In those models with a maximum of 9600 bps capability, selection of 12,000 bps or 14,400 bps will still only produce a set speed automatically reduced to 9600 bps.

NOTE: Selector 8 is applicable only to those models that support 14,400 bps.

- **Selectors 1 through 6: First and last choices of transmission speed for fallback**

  These selectors are used to set the MODEM speed range. With the first transmission speed choice specified by selectors 1 through 3, the equipment attempts to synchronize the data transmission via the MODEM. If the synchronization fails, the equipment automatically steps down to the next lowest speed and attempts to synchronize the data transmission again. The equipment repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 4 through 6.

  If the MODEM always falls back to a low transmission speed (e.g., 4,800 bps), set the first transmission speed choice to the lower one (e.g., modify it from 12,000 bps to 7,200 bps) in order to deactivate the high-speed MODEM function and reduce the training time for shorter transmission time.

  Generally, to save the transmission time, set the last transmission speed choice to a higher one.

WSW20 (Overseas communications mode setting)

Selector No.	Function	Setting and Specifications
1	EP* tone prefix	0: OFF 1: ON
2	Overseas communications mode (Reception)	0: 2100 Hz 1: 1100 Hz
3	Overseas communications mode (Transmission)	0: OFF 1: Ignores DIS once.
4 5	Min. time length from reception of CFR to start of transmission of video signals	No. 4 5 0 0 : 100 ms 0 1 : 200 ms 1 0 : 300 ms 1 1 : 400 ms
6 7	Chattering elimination for CNG detection	No. 6 7 0 0 : A (During CNG ON and OFF) 0 1 : B (During CNG OFF only) 1 X : C (No elimination)
8	CNG detection on/off	0: OFF 1: ON

* EP: Echo protection

- **Selector 1: EP tone prefix**

  Setting this selector to "1" makes the equipment transmit a 1700 Hz echo protection (EP) tone immediately preceding training in V.29 modulation system to prevent omission of training signals.

  Prefixing an EP tone is effective when the equipment fails to transmit at the V.29 modem speed and always has to fall back to 4800 bps transmission.

- **Selectors 2 and 3: Overseas communications mode**

  These selectors should be used if the facsimile equipment malfunctions in overseas communications. According to the communications error state, select the signal specifications.

  Setting selector 2 to "1" allows the equipment to use 1100 Hz CED signal instead of 2100 Hz in receiving operation. This prevents malfunctions resulting from echoes, since the 1100 Hz signal does not disable the echo suppressor (ES) while the 2100 Hz signal does.

  Setting selector 3 to "1" allows the equipment to ignore a DIS signal sent from the called station once in sending operation. This operation suppresses echoes since the first DIS signal immediately follows a 2100 Hz CED (which disables the ES) so that it is likely to be affected by echoes in the disabled ES state. However, such a disabled ES state will be removed soon so that the second and the following DIS signals are not susceptible to data distortion due to echoes. Note that some models when called may cause error by receiving a self-outputted DIS.

- **Selectors 8: CNG detection on/off**

  If this selector is set to "1," the equipment detects a CNG signal according to the condition preset by selectors 2 and 3 of WSW18 after a line is connected. If it is set to "0," the equipment detects a CNG signal as long as the line is connected.

WSW21 (TAD setting 1)

Selector No.	Function	Setting and Specifications
1 | 5	Max. waiting time for voice signal	No. 1 2 3 4 5 0 0 0 0 0 : No detection 0 0 0 0 1 : 1 sec. 0 0 0 1 0 : 2 sec. 0 0 0 1 1 : 3 sec. | | 0 1 0 0 0 : 8 sec. | | 1 1 1 1 1 : 31 sec.
6 7	Two-way recording	No. 6 7 0 0 : For U.S.A. (A) 0 1 : Except for U.S.A. (B) 1 0 : Without beep (C) 1 1 : OFF (D)
8	Erasure of message stored in the memory after the message transfer	0: Yes 1: No

NOTE: Selectors 6 through 8 are applicable to those models equipped with a built-in TAD.

- **Selectors 1 through 5: Max. waiting time for voice signal**

  In the TAD mode, the equipment waits for voice signal for the time length specified by these selectors before it automatically shifts to the facsimile message receive mode or disconnects the line.

- **Selectors 6 and 7: Two-way recording**

  These selectors select the specifications of the two-way recording feature.

- **Selector 8: Erasure of message**

  Setting this selector to "0" will erase the message recorded in the memory after the document retrieval feature transfers the message.

WSW22 (ECM and caller ID setting)

Selector No.	Function	Setting and Specifications	
1	ECM* in sending	0: ON	1: OFF
2	ECM* in receiving	0: ON	1: OFF
3	Call Waiting Caller ID	0: ON	1: OFF
4	Not used.		
5	Acceptable TCF bit error rate (%) (Only at 4800 bps)	0: 0%	1: 8%
6		0: 0%	1: 4%
7		0: 0%	1: 2%
8		0: 0%	1: 1%

* ECM: Error correction mode

NOTE: Selector 3 is applicable to the U.S.A. versions only.

NOTE: Selectors 5 through 8 are applicable to the Chinese, Taiwanese and Asian versions only.

- **Selector 3: Call Waiting Caller ID**

  Setting this selector to "0" allows the user to decide whether or not to interrupt the current call when a new call comes in. If Call Waiting Caller ID service is available in the area and the user subscribes to it, he/she can see information about his/her incoming call.

- **Selectors 5 through 8: Acceptable TCF bit error rate (%)**

  Setting two or more selectors to "1" produces addition of percent assigned to each selector. If you set selectors 7 and 8 to "1," the acceptable TCF bit error rate will be 3%.

WSW23 (Communications setting)

Selector No.	Function	Setting and Specifications
1	Starting point of training check (TCF)	0: From the head of a series of zeros 1: From any arbitrary point
2 3	Allowable training error rate	No. 2 3 0 0 : 0% 0 1 : 0.5% 1 0 : 1% 1 1 : 2%
4 5	Decoding error rate for transmission of RTN	No. 4 5 0 0 : 16% 0 1 : 14% 1 0 : 10% 1 1 : 8%
6	Issue of RTN at the occurrence of a pagination error	0: Yes 1: No
7	Resolution level for reception	0: Yes 1: No
8	Limitation of attenuation level	0: Yes 1: No

NOTE: Selector 8 is not applicable to the French versions.

- **Selector 1: Starting point of training check (TCF)**

  At the training phase of receiving operation, the called station detects for 1.0 second a training check (TCF) command, a series of zeros which is sent from the calling station for 1.5 seconds to verify training and give the first indication of the acceptability of the line.

  This selector sets the starting point from which the called station should start counting those zeros. If this selector is set to "0," the called station starts counting zeros 100 ms after the head of a series of zeros is detected.

  If it is set to "1," the called station starts counting zeros upon detection of 10-ms successive zeros 50 ms after the head of a series of zeros is detected. In this case, if the detection of 10-ms successive zeros is too late, the data counting period will become less than 1.0 second, making the called station judge the line condition unacceptable.

- **Selectors 2 and 3: Allowable training error rate**

  The called station checks a series of zeros gathered in training (as described in Selector 1) according to the allowable training error rate set by these selectors. If the called station judges the line condition to be accepted, it responds with CFR; if not, it responds with FTT.

- **Selectors 4 and 5: Decoding error rate for transmission of RTN**

  The facsimile equipment checks the actual decoding errors and then transmits an RTN according to the decoding error rate (Number of lines containing an error per page ÷ Total number of lines per page) set by these selectors.

- **Selector 6: Issue of RTN at the occurrence of a pagination error**

  If this selector is set to "0," the facsimile equipment transmits an RTN when a pagination error occurs due to recording lag relative to receiving.

- **Selector 7: Resolution level for reception**

  This selector determines whether the resolution should be limited at the start of reception in the sleep mode.

- **Selector 8: Limitation of attenuation level**

  Setting this selector to "0" limits the transmitting level of the modem to 10 dB.

  This setting has priority over the settings selected by WSW02 (selectors 5 through 8) and WSW13 (selectors 5 through 8).

WSW24 (TAD setting 2)

Selector No.	Function	Setting and Specifications
1 2	Maximum OGM recording time	No. 1 2 0 0 : 15 sec. 0 1 : 20 sec. 1 0 : 30 sec. 1 1 : 50 sec.
3 4	Time length from CML ON to start of pseudo ring backtone transmission	No. 3 4 0 0 : 4 sec. 0 1 : 3 sec. 1 0 : 2 sec. 1 1 : 1 sec.
5 | 8	Attenuator for playback of ICM/ OGM to the line (Selectable from the range of 0-15 dB)	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

NOTE: Selectors 1, 2 and 5 through 8 are applicable to those models equipped with a built-in TAD.

- **Selectors 1 and 2: Maximum OGM recording time**

  These selectors set the allowable maximum recording time for an OGM.

- **Selectors 3 and 4: Time length from CML ON to start of pseudo ring backtone transmission**

  These selectors set the length of time from CML-ON up to the start of pseudo ring backtone transmission.

  In those versions which have an OGM facility, the settings made by these selectors also apply to the length of time from CML-ON up to the start of OGM transmission.

- **Selectors 5 through 8: Attenuator for playback of ICM/OGM to the line**

  Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

  This setting will not be limited by selector 8 of WSW23.

WSW25 (TAD setting 3)

Selector No.	Function	Setting and Specifications
1 2	Delay time for starting detection of voice signal	No. 1 2 0 0 : 0 sec. 0 1 : 8 sec. 1 0 : 16 sec. 1 1 : 24 sec.
3 4	Detection level for no voice signal	No. 3 4 0 0 : -43 dB (A) 0 1 : -46 dB (B) 1 0 : -49 dB (C) 1 1 : -51 dB (D)
5 | 7	Pause between paging number and PIN	No. 5 6 7 0 0 0 : 2 sec. 0 0 1 : 4 sec. 0 1 0 : 6 sec. 0 1 1 : 8 sec. 1 0 0 : 10 sec. 1 0 1 : 12 sec. 1 1 0 : 14 sec. 1 1 1 : 16 sec.
8	Not used.	

NOTE: Selectors 1 through 4 are not applicable to the U.S.A. versions.

NOTE: Selectors 5 through 7 are applicable to those models equipped with a built-in TAD.

- **Selectors 1 and 2: Delay time for starting detection of voice signal**

  These selectors take effect only in TAD mode (when the external TAD is connected to the equipment). The equipment delays starting detection of the voice signal by the time length specified by these selectors.

  The total length of the delay time specified by these selectors and the maximum waiting time specified by WSW21 (selectors 1 through 5) should not exceed 40 seconds.

- **Selectors 3 and 4: Detection level for no voice signal**

  These selectors set the detection level for no voice signal in the TAD mode (when the external TAD is connected to the equipment).

- **Selectors 5 through 7: Pause between paging number and PIN**

  These selectors set the pause time between a telephone number being paged and PIN (private identification number) for the paging feature.

WSW26 (Function setting 4)

Selector No.	Function	Setting and Specifications
1	Application of DC wetting pulse	0: OFF 1: ON
2	Overvoltage limiter at the applying time of a wetting pulse	0: ON 1: OFF
3	Not used.	
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode)	No. 4 5 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
6 7	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode or via the facsimile equipment in F/T mode)	No. 6 7 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
8	FAX reception after the time-out of pseudo ring backtones in F/T mode	0: Yes 1: No

NOTE: Selectors 1, 2, 6 and 7 are not applicable to the U.S.A. versions.

NOTE: Selectors 6 and 7 are applicable to those models equipped with a built-in TAD.

- **Selectors 1 and 2: Application of DC wetting pulse and overvoltage limiter**

  These selectors take effect only when the UK version of the facsimile equipment is set up for the British Telecom's caller ID service or its equivalent.

  Selector 2 takes effect only when selector 1 is set to "1."

- **Selectors 4 and 5: No. of CNG cycles to be detected**

  The equipment interprets a CNG as an effective signal if it detects a CNG signal by the number of cycles specified by these selectors when the line is connected via the external telephone except in the external TAD mode.

- **Selectors 6 and 7: No. of CNG cycles to be detected**

  The equipment interprets a CNG as an effective signal if it detects a CNG signal by the number of cycles specified by these selectors when the line is connected via the external telephone in the external TAD mode or via the facsimile equipment in F/T mode.

- **Selector 8: FAX reception after the time-out of pseudo ring backtones in F/T mode**

  If this selector is set to "0," the equipment starts receiving FAX messages when it receives a CNG signal within 10-second no-tone period provided after the time-out of pseudo ring backtones. If no CNG is received within the period, the equipment disconnects the line.

  If this selector is set to "1," the equipment disconnects the line after issuing pseudo ring backtones.

WSW27 (Function setting 5)

Selector No.	Function	Setting and Specifications
1	Definition of programmable key	0: TEL key 1: TEL/POLLING key
2	Ringer OFF setting	0: Yes 1: No
3	Automatic playback of OGM at the start time of OGM ON mode	0: No 1: Yes
4	Detection of distinctive ringing pattern	0: Yes 1: No
5	Not used.	
6	Recording quality level	0: Normal 1: High
7	Sampling rate when the recording quality level is set to High	0: Short 1: Long
8	Toner save mode	0: Yes 1: No

NOTE: Selector 1 is not applicable to the U.S.A. versions.

NOTE: Selectors 3, 6 and 7 are applicable to those models equipped with a built-in TAD.

- **Selector 1: Definition of programmable key**

  This selector defines a programmable key as a TEL key or TEL/POLLING key.

  Setting this selector to "1" allows the programmable key to function as either a TEL or POLLING key if pressed when the handset is off or on the hook, respectively.

  This setting is effective only for those models having a programmable key.

- **Selector 2: Ringer OFF setting**

  This selector determines whether or not the ringer can be set to OFF.

- **Selector 3: Automatic playback of OGM at the start time of OGM ON mode**

  This selector determines whether or not the equipment automatically plays back an OGM the moment it switches to the OGM ON mode in the MC mode.

- **Selector 4: Detection of distinctive ringing pattern**

  If this selector is set to "1" the equipment detects only the number of rings; if it is set to "0" the equipment detects the number of rings and the ringing time length to compare the detected ringing pattern with the registered distinctive one.

- **Selector 6: Recording quality level**

  This selector determines the recording quality level (this function can be accessed also by the user function 8-8). If it is set to "0" (Normal), the sampling rate specified by selector 4 of WSW30 takes effect; if it is set to "1" (High), the sampling rate by selector 7 of WSW27 takes effect.

- **Selector 7: Sampling rate when the recording quality level is set to Normal**

  This selector determines the sampling rate when selector 6 of WSW27 is set to "1" (High). If this selector is set to "0," the sampling rate is 9.6 kbps; if it is set to "1," the sampling rate is 8.8 kbps.

WSW28 (Function setting 6)

Selector No.	Function	Setting and Specifications
1 | 3	Transmission level of DTMF high-band frequency signal	No. 1 2 3 0 0 0 : 0 dB 0 0 1 : +1 dB 0 1 0 : +2 dB 0 1 1 : +3 dB 1 0 0 : 0 dB 1 0 1 : -1 dB 1 1 0 : -2 dB 1 1 1 : -3 dB
4 | 6	Transmission level of DTMF low-band frequency signal	No. 4 5 6 0 0 0 : 0 dB 0 0 1 : +1 dB 0 1 0 : +2 dB 0 1 1 : +3 dB 1 0 0 : 0 dB 1 0 1 : -1 dB 1 1 0 : -2 dB 1 1 1 : -3 dB
7	Current available resolution in receiving	0: Sends the current resolution statement 1: Switches the resolution to the lower level
8	Continuous Polling	0: OFF 1: ON

NOTE: Selector 8 is applicable to the L621.

- **Selectors 1 through 6: Transmission level of DTMF high-/low-band frequency signal**

  These selectors are intended for the manufacturer who tests the equipment for the Standard. Never access them.

- **Selector 7: Current available resolution in receiving**

  If this selector is set to "0," the equipment will send the resolution statement to the calling station, telling the maximum capacity of the equipment independent of the current memory space available.

  If this selector is set to "1," the equipment automatically switches the resolution to the lower level (superfine → fine → standard) if the memory space is insufficient to receive data at the designated resolution.

WSW29 (Function setting 7)

Selector No.	Function	Setting and Specifications
1 | 3	Compression threshold level for voice signals inputted via the network in the built-in TAD operation	No. 1 2 3 0 0 0 : -47.0 dBm (A) 0 0 1 : -48.5 dBm (B) 0 1 0 : -50.0 dBm (C) 0 1 1 : -51.5 dBm (D) 1 0 0 : -53.0 dBm (E) 1 0 1 : -54.5 dBm (F) 1 1 0 : -56.0 dBm (G) 1 1 1 : OFF (H)
4 | 6	Compression threshold level for voice signals inputted via the handset in the built-in TAD operation	No. 4 5 6 0 0 0 : -44.0 dBm (A) 0 0 1 : -45.5 dBm (B) 0 1 0 : -47.0 dBm (C) 0 1 1 : -48.5 dBm (D) 1 0 0 : -50.0 dBm (E) 1 0 1 : -51.5 dBm (F) 1 1 0 : -53.0 dBm (G) 1 1 1 : OFF (H)
7	Automatic dialing by caller IDs stored in the memory	0: Yes 1: No
8	Beep when the memory area for the activity report becomes full	0: No 1: Yes

NOTE: WSW29 is applicable to those models equipped with a built-in TAD.

NOTE: Selector 7 is applicable to those versions supporting the caller ID service. Note that it is not applicable to the U.S.A. versions.

NOTE: Selector 8 is applicable to the European versions only.

- **Selectors 1 through 6: Compression threshold level for voice signals inputted via the network/ handset in the built-in TAD operation**

  If voice signals inputted via the network or handset are below the level specified by these selectors, the TAD interprets those received voice signals as no signal, compressing the recording time.

- **Selector 7: Automatic dialing by caller IDs stored in the memory**

  This selector determines whether or not the automatic dialing function by caller IDs stored in the memory (see the Note below) can be accessed.

  If it is set to "0," caller IDs stored in the memory can be called up on the LCD by the user function 6-7 and then pressing the **Start** key when the desired caller ID is displayed dials the caller automatically.

  (Note: The equipment can store a maximum of the latest 30 incoming caller IDs together with the reception date and time in the memory.)

- **Selector 8: Beep when the memory area for the activity report becomes full**

  If this selector is set to "1," the equipment will beep when the memory area for the activity report becomes full (as well as displaying a message on the LCD, prompting the output of the activity report).

WSW30 (Function setting 8)

Selector No.	Function	Setting and Specifications
1 | 3	Detection level of dial tone or busy tone for the built-in TAD operation	No. 1 2 3 0 0 0 : -38.0 dBm (A) 0 0 1 : -39.5 dBm (B) 0 1 0 : -41.0 dBm (C) 0 1 1 : -42.5 dBm (D) 1 0 0 : -44.0 dBm (E) 1 0 1 : -45.5 dBm (F) 1 1 0 : -47.0 dBm (G) 1 1 1 : -48.5 dBm (H)
4 | 7	Not used.	
8	"CHANGE DRUM SOON" message	0: Yes 1: No

NOTE: Selectors 1 through 3 are applicable to those models equipped with a built-in TAD.

- **Selectors 1 through 3: Detection level of dial tone or busy tone for built-in TAD operation**

  If dial tone or busy tone inputted during ICM recording is below the level specified by these selectors, the TAD stops recording and disconnects the line.

- **Selector 8: "CHANGE DRUM SOON" message**

  This selector determines whether or not the "CHANGE DRUM SOON" message should appear on the LCD when the service life of the laser-sensitive drum in the laser unit will expire soon.

WSW31 (Function setting 9)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	Default reduction rate for failure of automatic reduction during recording	0: 100% 1: 75% (Letter) 87% (A4) 95% (Legal)
3 4	Not used.	
5	Minimum short-OFF duration in distinctive ringing	0: 130 ms 1: 90 ms
6 | 8	Not used.	

- **Selector 2: Default reduction rate for failure of automatic reduction during recording**

  This selector sets the default reduction rate to be applied if the automatic reduction function fails to record one-page data sent from the calling station in a single page of the current recording paper.

  If it is set to "0," the equipment records one-page data at full size (100%) without reduction; if it is set to "1," the equipment records it at the size* specified according to the current paper size.

  (*The U.S.A. or Canadian versions allow the user to select the desired paper size from the control panel. According to the paper size setting, the equipment determines the reduction rate. Other versions can handle only A4-size paper, so the reduction rate is always 87%.)

- **Selector 5: Minimum short-OFF duration in distinctive ringing**

  The ringer pattern consists of short and long rings, e.g., short-short-long rings. This selector sets the minimum OFF duration following a short ring in order to avoid missing ringer tones in distinctive ringing.

  If this selector is set to "1," when the short-OFF duration is a minimum of 90 ms long, then the equipment will interpret the short-OFF as OFF.

WSW32 (Function setting 10)

Selector No.	Function	Setting and Specifications
1 | 4	Not used.	
5 6	Default resolution	No. 5 6 0 0 : Standard 0 1 : Fine 1 0 : Super fine 1 1 : Photo
7 8	Default contrast	No. 7 8 0 X : Automatic 1 0 : Super light 1 1 : Super dark

- **Selectors 5 and 6: Default resolution**

  These selectors set the default resolution which applies when the equipment is powered up or completes a transaction.

- **Selectors 7 and 8: Default contrast**

  These selectors set the default contrast which applies when the equipment is powered up or completes a transaction.

WSW33 (Function setting 11)

Selector No.	Function	Setting and Specifications
1 | 3	Detection threshold level for voice signals inputted via the telephone line in the built-in TAD operation	No. 1 2 3 0 0 0 : -42.5 dBm (A) 0 0 1 : -44.0 dBm (B) 0 1 0 : -45.5 dBm (C) 0 1 1 : -47.0 dBm (D) 1 0 0 : -48.5 dBm (E) 1 0 1 : -50.0 dBm (F) 1 1 0 : -51.5 dBm (G) 1 1 1 : -53.0 dBm (H)
4 5	FAX receiving speed to be kept within the transmission speed limit to the PC	No. 4 5 0 0 : 14,400 bps 0 1 : 12,000 bps 1 0 : 9,600 bps 1 1 : 7,200 bps
6	Report output of polled transmission requests	0: Yes 1: No
7 8	Comfortable noise level	No. 7 8 0 0 : OFF 0 1 : Low (A) 1 0 : Medium (B) 1 1 : High (C)

NOTE: Selectors 1 through 3, 7 and 8 are applicable to those models equipped with a built-in TAD.

NOTE: Selector 6 is not applicable to the U.S.A. versions.

- **Selectors 1 through 3: Detection threshold level for voice signals inputted via the telephone line in the built-in TAD operation**

  If the equipment detects voice signals exceeding the threshold level set by these selectors, it will interpret them as effective voice.

- **Selectors 4 and 5: FAX receiving speed to be kept within the transmission speed limit to the PC**

  To transmit FAX data being received from other facsimile equipment to the connected PC, you may need to keep the FAX receiving speed within the transmission speed limit to the PC. In an initial negotiation sequence for transmission, the equipment responds to the calling station with the allowable FAX receiving speed specified by these selectors.

- **Selectors 7 and 8: Comfortable noise level**

  These selectors set the level of noise to be added during playing-back of voice signals recorded with no-signal compression.

  If they are set to "0, 0," no noise will be added.

WSW34 (Function setting 12)

Selector No.	Function	Setting and Specifications
1 | 3	Erasing time length of ICM tone recorded preceding the tone detection starting point in the case of automatic line disconnection due to no voice signal received	No. 1 2 3 0 0 0 : 0 sec. 0 0 1 : 1 sec. 0 1 0 : 2 sec. 0 1 1 : 3 sec. 1 0 0 : 4 sec. 1 0 1 : 5 sec. 1 1 0 : 6 sec. 1 1 1 : 7 sec.
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode or via the facsimile equipment in F/T or TAD mode)	No. 4 5 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
6 7	Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation	No. 6 7 0 0 : 3 0 1 : 2 1 0 : 1 1 1 : OFF
8	CNG detection when the external telephone is connected with a line TAD mode	0: Only when the equipment detects itself being called 1: Always

NOTE: Selectors 1 through 3 are applicable to those models equipped with a built-in TAD.

- **Selectors 1 through 3: Erasing time length of ICM tone recorded preceding the tone detection starting point in the case of automatic line disconnection due to no voice signal received**

  If the equipment has disconnected the line after detection of disconnection tone in ICM recording, it erases tone recorded preceding the tone detection starting point for the time length set by these selectors.

- **Selectors 4 and 5: No. of CNG cycles to be detected**

  The equipment interprets a CNG as an effective signal if it detects a CNG signal by the number of cycles specified by these selectors in any of the following cases:

  - when the line is connected via the external telephone in the external TAD mode.
  - when the line is connected via the facsimile equipment in F/T or TAD mode.

- **Selectors 6 and 7: Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation**

  If the equipment receives this specified number of DTMF tone signals during external TAD operation, it will not detect CNG afterwards.

  If these selectors are set to "1, 1," the CNG detection will not be inhibited.

- **Selector 8: CNG detection when the external telephone is connected with a line in TAD**

  If this selector is set to "0," the equipment will detect a CNG signal only when it detects itself being called. If the external telephone is connected with a line before the equipment detects itself being called, the equipment will not longer detect a CNG signal.

  If this selector is set to"1," the equipment will detect a CNG signal every time the external telephone is connected with a line, even without detecting itself being called.

WSW35 (Function setting 13)

Selector No.	Function	Setting and Specifications
1 | 4	Detection time length of the disconnection tone in ICM recording	No. 1 2 3 4 0 0 0 0 : No detection 0 0 0 1 : 1 sec. 0 0 1 0 : 2 sec. 0 1 0 0 : 4 sec. | | 1 1 1 1 : 15 sec.
5 | 8	Not used.	

NOTE: Selectors 1 through 4 are applicable to those models equipped with a built-in TAD.

- **Selectors 1 through 4: Detection time length of the disconnection tone in ICM recording**
  If the equipment detects disconnection tone for the time length set by these selectors, it will disconnect the line.

WSW36 (Function setting 14)

Selector No.	Function	Setting and Specifications
1	ECP mode*	0: ON 1: OFF
2	Recovery from Inactive PC Interface	0: Disabled 1: Enabled
3	PC Power-off Recognition Time	0: Normal 1: Long
4 5	Not used.	
6 | 8	Lower limit of frequency to be ignored after detection of calling signals (Ci)	No. 6 7 8 0 0 0 : 0 (Not ignored) 0 0 1 : 4 (448 Hz) 0 1 0 : 8 (244 Hz) 0 1 1 : 12 (162 Hz) 1 0 0 : 16 (122 Hz) 1 0 1 : 20 (97 Hz) 1 1 0 : 24 (81 Hz) 1 1 1 : 28 (69 Hz)

*ECP (Enhanced Capabilities Port)

- **Selector 1: ECP mode**

  The ECP mode enhances the normal bidirectional communications between the facsimile equipment and the connected PC for higher transmission speed.

- **Selector 2: Recovery from Inactive PC Interface**

  If the facsimile equipment recognizes via the STB signal line that the connected PC is powered off, it will turn the PC interface outputs Low to protect the PC from hazards that could be caused by weak electric current accidentally flown from the equipment.

  This selector determines whether the equipment should recover from the inactive PC interface to normal interfacing state upon receipt of data from the PC.

- **Selector 3: PC Power-off Recognition Time**

  This selector sets the time length from when the equipment detects the PC powered off until it recognizes the detected state as power-off.

  If selector 2 is set to "0," it is recommended that selector 3 be set to "1": otherwise, the equipment may mistakenly detect PC powered off.

- **Selectors 6 through 8: Lower limit of frequency to be ignored after detection of calling signals (Ci)**

  At the start of reception, if the equipment detects the frequency of calling signals (Ci) specified by selectors 1 through 4 of WSW14, it will start the ringer sounding. When doing so, the equipment may fail to detect the calling signals normally due to noises superimposed at the time of reception. To prevent it, use selectors 6 through 8 of WSW36.

  If the equipment detects higher frequencies than the lower limit specified by these selectors, it will regard them as noise and interpret that detecting state as being normal, allowing the ringer to keep sounding (until the equipment starts automatic reception of FAX data if in the FAX mode or enters the TAD mode if set in the TEL mode, according to the preset number of ringers).

[B] Printout of firmware switch data

Function

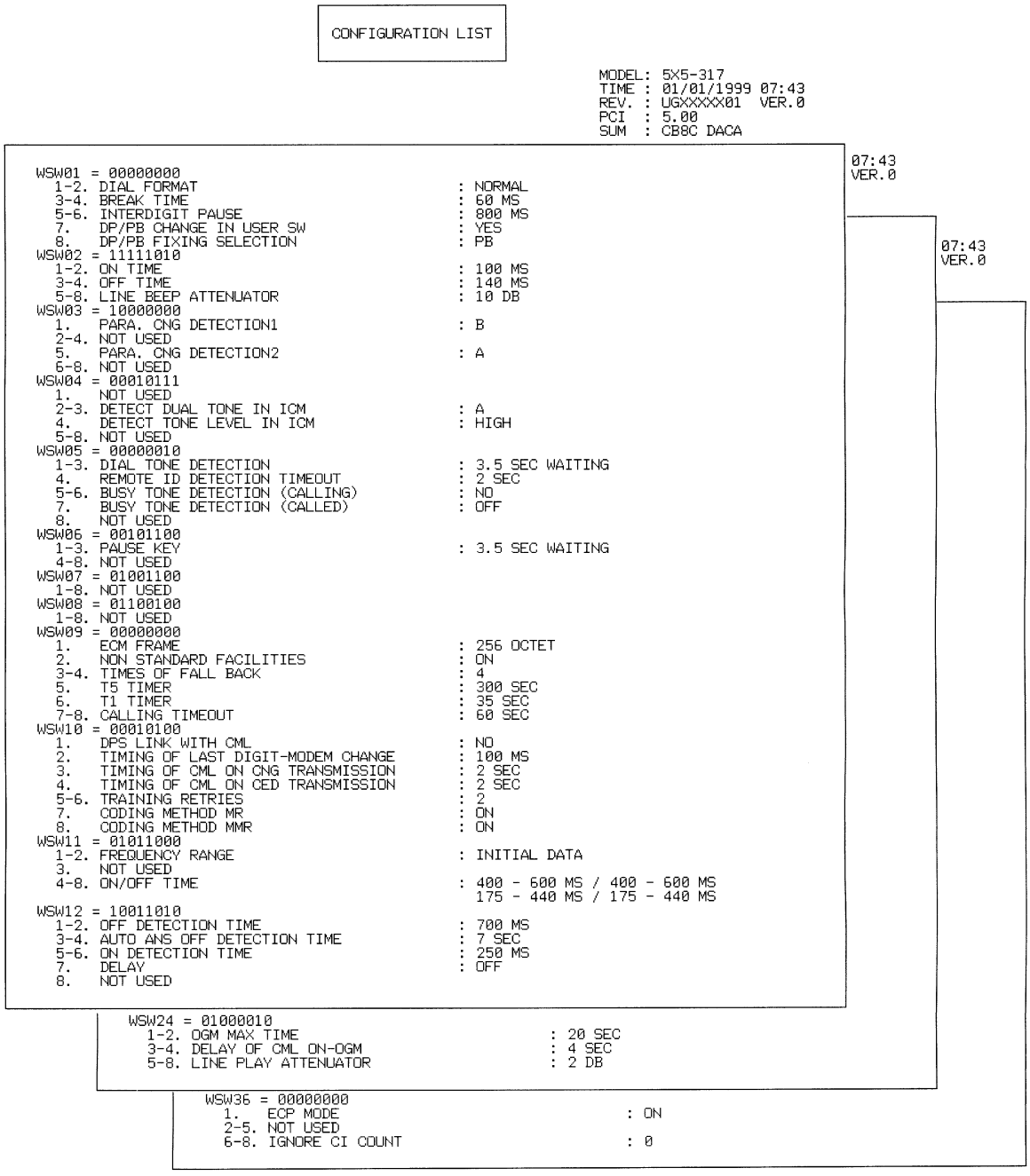
The equipment prints out the setting items and contents specified by the firmware switches.

Operating Procedure

(1) Press the **1** key twice in the initial stage of the maintenance mode.
The "PRINTING" will appear on the LCD.

(2) The equipment prints out the configuration list as shown in the figure below.

(3) Upon completion of printing, the equipment returns to the initial stage of the maintenance mode.



CONFIGURATION LIST

MODEL: 5X5-317
TIME : 01/01/1999 07:43
REV. : UGXXXXX01 VER.0
PCI : 5.00
SUM : CB8C DACA

07:43
VER.0

```
WSW01 = 00000000
  1-2. DIAL FORMAT                        : NORMAL
  3-4. BREAK TIME                         : 60 MS
  5-6. INTERDIGIT PAUSE                   : 800 MS
  7.   DP/PB CHANGE IN USER SW            : YES
  8.   DP/PB FIXING SELECTION             : PB
WSW02 = 11111010
  1-2. ON TIME                            : 100 MS
  3-4. OFF TIME                           : 140 MS
  5-8. LINE BEEP ATTENUATOR               : 10 DB
WSW03 = 10000000
  1.   PARA. CNG DETECTION1               : B
  2-4. NOT USED
  5.   PARA. CNG DETECTION2               : A
  6-8. NOT USED
WSW04 = 00010111
  1.   NOT USED
  2-3. DETECT DUAL TONE IN ICM            : A
  4.   DETECT TONE LEVEL IN ICM           : HIGH
  5-8. NOT USED
WSW05 = 00000010
  1-3. DIAL TONE DETECTION                : 3.5 SEC WAITING
  4.   REMOTE ID DETECTION TIMEOUT        : 2 SEC
  5-6. BUSY TONE DETECTION (CALLING)      : NO
  7.   BUSY TONE DETECTION (CALLED)       : OFF
  8.   NOT USED
WSW06 = 00101100
  1-3. PAUSE KEY                          : 3.5 SEC WAITING
  4-8. NOT USED
WSW07 = 01001100
  1-8. NOT USED
WSW08 = 01100100
  1-8. NOT USED
WSW09 = 00000000
  1.   ECM FRAME                          : 256 OCTET
  2.   NON STANDARD FACILITIES            : ON
  3-4. TIMES OF FALL BACK                 : 4
  5.   T5 TIMER                           : 300 SEC
  6.   T1 TIMER                           : 35 SEC
  7-8. CALLING TIMEOUT                    : 60 SEC
WSW10 = 00010100
  1.   DPS LINK WITH CML                  : NO
  2.   TIMING OF LAST DIGIT-MODEM CHANGE  : 100 MS
  3.   TIMING OF CML ON CNG TRANSMISSION  : 2 SEC
  4.   TIMING OF CML ON CED TRANSMISSION  : 2 SEC
  5-6. TRAINING RETRIES                   : 2
  7.   CODING METHOD MR                   : ON
  8.   CODING METHOD MMR                  : ON
WSW11 = 01011000
  1-2. FREQUENCY RANGE                    : INITIAL DATA
  3.   NOT USED
  4-8. ON/OFF TIME                        : 400 - 600 MS / 400 - 600 MS
                                            175 - 440 MS / 175 - 440 MS
WSW12 = 10011010
  1-2. OFF DETECTION TIME                 : 700 MS
  3-4. AUTO ANS OFF DETECTION TIME        : 7 SEC
  5-6. ON DETECTION TIME                  : 250 MS
  7.   DELAY                              : OFF
  8.   NOT USED
```

07:43
VER.0

```
WSW24 = 01000010
  1-2. OGM MAX TIME                       : 20 SEC
  3-4. DELAY OF CML ON-OGM                : 4 SEC
  5-8. LINE PLAY ATTENUATOR               : 2 DB
```

```
WSW36 = 00000000
  1.   ECP MODE                           : ON
  2-5. NOT USED
  6-8. IGNORE CI COUNT                    : 0
```

Configuration List

3.6 Operational Check of LCD

Function

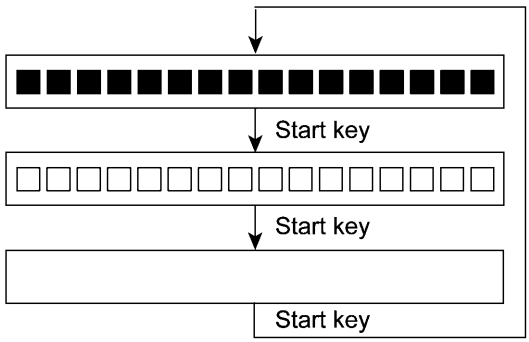
This function allows you to check whether the LCD on the control panel works normally.

Operating Procedure

(1) Press the **1** and **2** keys in this order in the initial stage of the maintenance mode.

The LCD shows

(2) Press the **Start** key. Each time you press the **Start** key, the LCD cycles through the displays shown at right.



(3) Press the **Stop** key in any process of the above display cycle. The equipment beeps for one second and returns to the initial stage of the maintenance mode.

3.7 Operational Check of Control Panel PCB

Function

This function allows you to check the control panel PCB for normal operation.

Operating Procedure

(1) Press the **1** and **3** keys in this order in the initial stage of the maintenance mode.

The "00 " will appear on the LCD.

(2) Press the keys and buttons in the order designated in the illustration shown below.

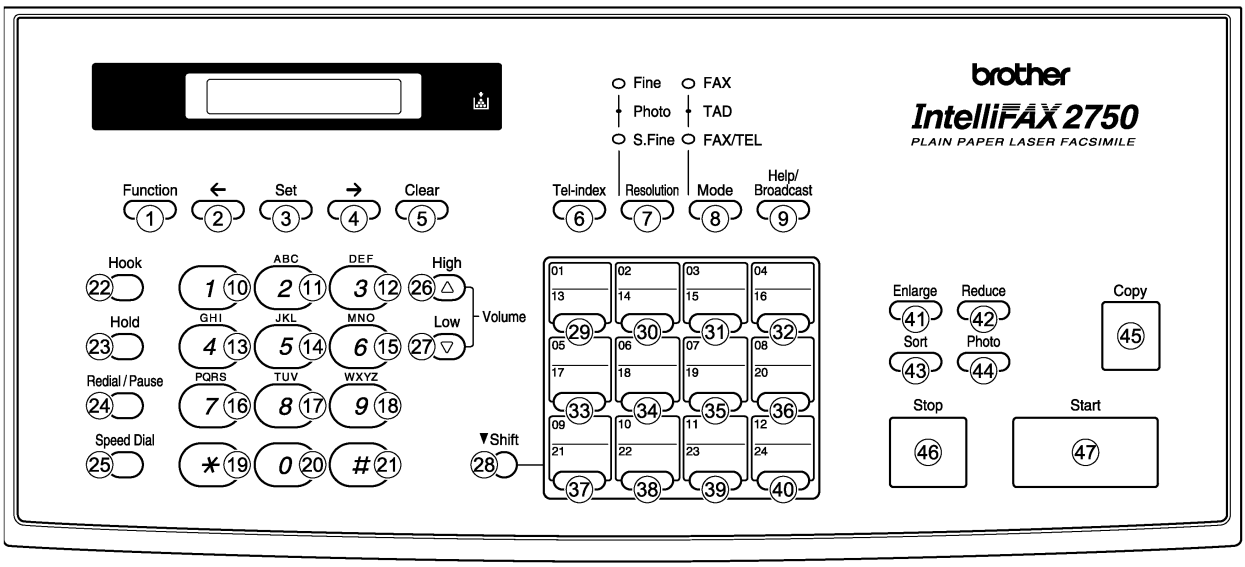
The LCD shows the corresponding number in decimal notation each time a key or button is pressed. Check that the displayed number is correct by referring to the illustration below.

If a key or button is pressed out of order, the equipment beeps and displays the "INVALID OPERATE" on the LCD. To return to the status ready to accept key & button entry for operational check, press the **Stop** key.

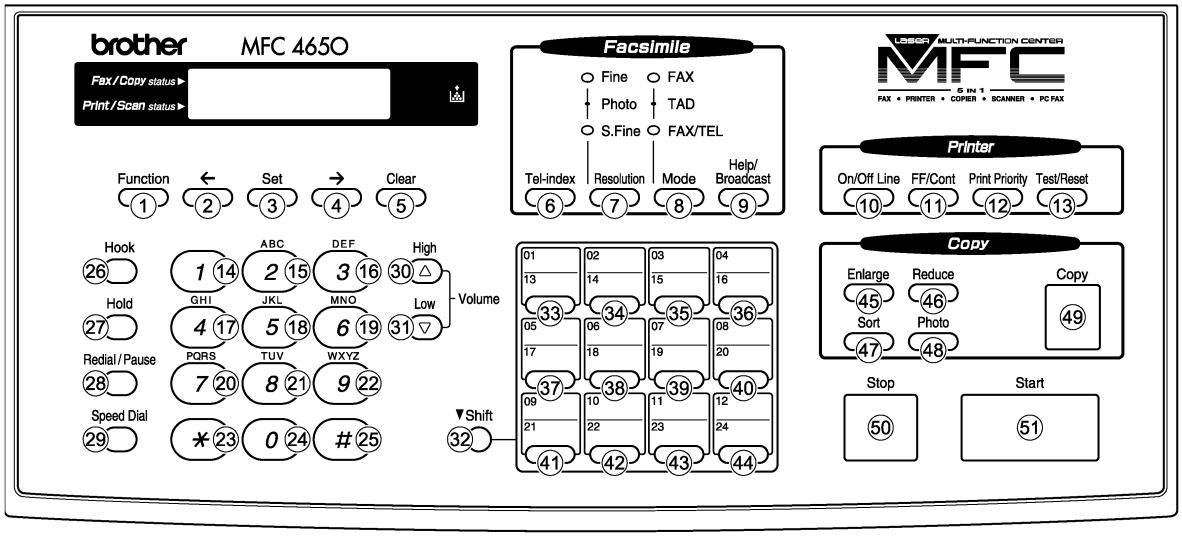
(3) After the last number key or button is pressed, the equipment beeps and returns to the initial stage of the maintenance mode.

To terminate this operation, press the **Stop** key. The equipment returns to the initial stage of the maintenance mode.

FAX2750/FAX-8250P

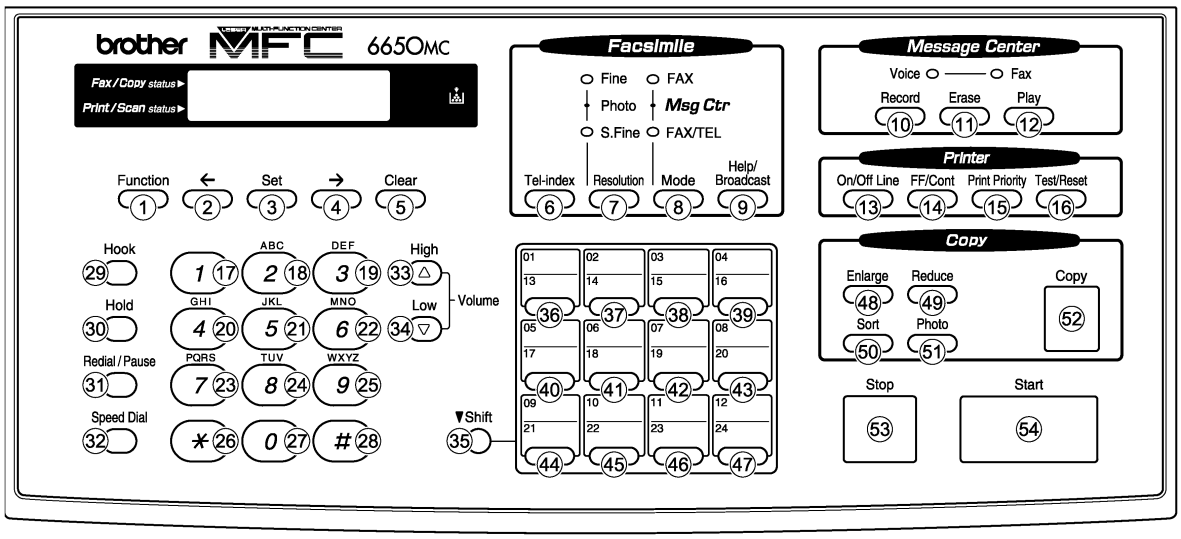


MFC4350/MFC4650/MFC-9050

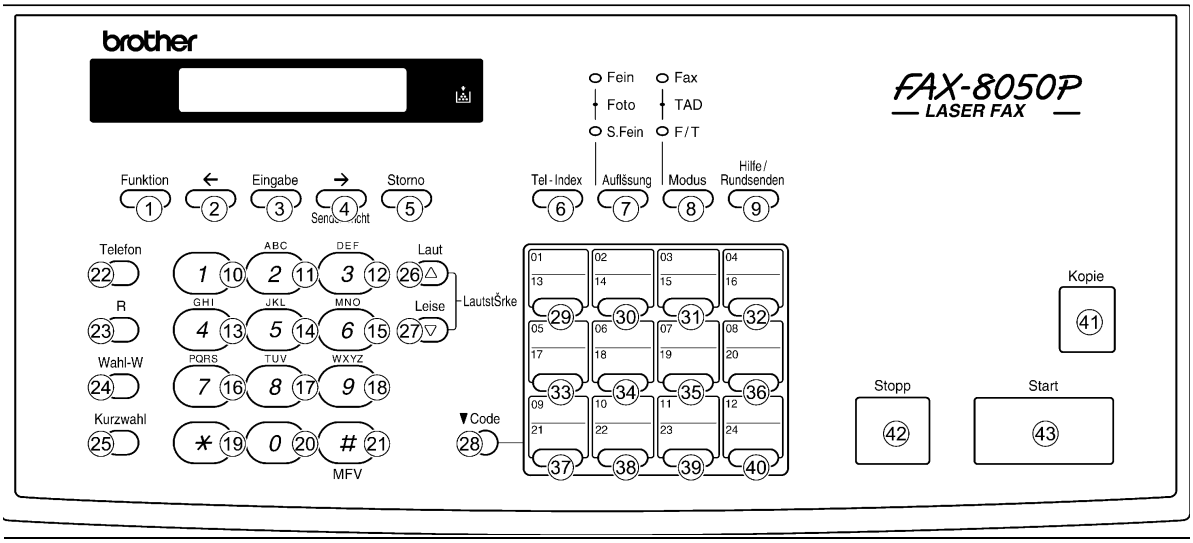


Key & Button Entry Order (1)

MFC6650MC/MFC-9550



FAX-8050P



Key & Button Entry Order (2)

3.8 Sensor Operational Check

Function

This function allows you to check whether the eight sensors (document front sensor, document rear sensor, sheet feeder cover sensor, cover sensor, registration sensor, paper ejection sensor, toner sensor, and hook switch sensor*) operate correctly.

(*The FAX-8250P/MFC-9050 has no hook switch sensor.)

In the FAX-8250P/MFC-9050, the LCD shows the "FRRETCCVRGHATN" when

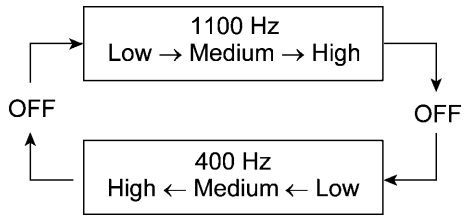
- the document front sensor detects no paper (FR),
- the document rear sensor detects no paper (RE),
- the sheet feeder cover is closed (TC),
- the top cover is closed (CV),
- the registration sensor detects no paper (RG),
- the paper ejection sensor detects no paper (HA), and
- the toner sensor detects toner (TN).

In other models, the LCD shows the "FRRETCCVRGHATNHK" when

- the document front sensor detects no paper (FR),
- the document rear sensor detects no paper (RE),
- the sheet feeder cover is closed (TC),
- the top cover is closed (CV),
- the registration sensor detects no paper (RG),
- the paper ejection sensor detects no paper (HA),
- the toner sensor detects toner (TN), and
- the hook switch sensor detects the on-hook state (HK).

Operating Procedure

(1) Press the **3** and **2** keys in this order in the initial stage of the maintenance mode. The equipment sounds 1100 Hz and 400 Hz tones cyclically through the following volumes for testing the speaker.



In the FAX-8250P/MFC-9050, the LCD should show "FRRETCCVRGHATN" if the detecting conditions of the seven sensors are as defined above.

In other models, LCD should show "FRRETCCVRGHATNHK" if the detecting conditions of the eight sensors are as defined above.

(2) Change the detecting conditions (e.g., insert paper through the document sensors or the registration sensor, open the sheet feeder cover or the top cover, jam paper at the paper outlet, remove the toner cartridge, and lift up the handset), and then check that the indication on the LCD changes according to the sensor states.

(3) To stop this operation and return the equipment to the initial maintenance mode, press the **Stop** key.

3.9 CIS Scanner Area Setting

Function

The equipment sets the CIS scanner area and stores it into the EEPROM.

Operating Procedure

(1) Press the **5** key twice in the initial stage of the maintenance mode.

The "SCANNER AREA SET," "BLACK LEVEL INIT," and "WHITE LEVEL INIT" will appear on the LCD in this order.

The equipment checks and sets the area to be scanned.

If no error is noted, the equipment returns to the initial stage of the maintenance mode.

If any error is noted, the "SCANNER ERROR" will appear on the LCD. To return the equipment to the initial stage of the maintenance mode, press the **Stop** key.

3.10 EEPROM Customizing

Function

This function allows you to customize the EEPROM according to language, function settings, and firmware switch settings. The customizing codes list is given in Appendix 1.

NOTE: If you replace the main PCB, be sure to carry out this procedure.

Operating Procedure

(1) Press the **7** and **4** keys in this order in the initial stage of the maintenance mode.

The current customizing code (e.g., 1101 in the case of MFC4350 U.S.A. versions) appears.

(2) Enter the desired customizing code (e.g., 0202 in the case of MFC4650 Canadian versions).

The newly entered code appears.

NOTE: *If a wrong 4-digit code is entered, the equipment will malfunction.*

(3) Press the **Start** key.

The equipment saves the setting and returns to the initial stage of the maintenance mode.

If you press the **Stop** key or no keys are pressed for one minute in the above procedure, the equipment stops the procedure and returns to the initial stage of the maintenance mode.

3.11 Equipment Error Code Indication

Function

This function displays an error code of the last error on the LCD.

Operating Procedure

(1) Press the **8** and **2** keys in this order in the initial stage of the maintenance mode.

The LCD shows the "MACHINE ERROR X X."

(2) To stop this operation and return the equipment to the initial stage of the maintenance mode, press the **Stop** key.

3.12 Output of Transmission Log to the Telephone Line

Function

This function outputs the transmission log (that the equipment has stored about the latest 0transmission) to the telephone line. It allows the service personnel to receive the transmission log of the user's equipment at a remote location and use it for analyzing problems arising in the user's equipment.

Operating Procedure

(1) If the user's equipment has a transmission-related problem, call the user's equipment at a remote location from your equipment.

(2) If the line is connected, have the user perform the following:

1) FAX2750/MFC4350/MFC4650/MFC6650MC: Press the **Function**, **Mode**, and **0** keys in this order.

FAX-8250P/MFC-9050/MFC-9550: Press the **Menu**, **Mode**, and **0** keys in this order.

2) Press the **8** and **7** keys.

The above operation makes the user's equipment send CNG to your equipment for sending the transmission log.

(3) If you hear the CNG sent from the user's equipment, press the **Start** key of your equipment.

Your equipment will start to receive the transmission log from the user's equipment.

3.13 Cancellation of the Memory Security Mode

Function

This procedure can cancel the memory security mode. Use this procedure if the user forgets his/her password entered when setting the memory security mode so as not to exit from the memory security mode.

NOTE: Carrying out this procedure will lose passwords previously entered but retain FAX messages and ICM received in the memory security mode.

Operating Procedure

(1) When the SECURE MODE is displayed on the LCD, hold down the **Function** key and press the **#** key. Within two seconds, start to press the **2**, **7**, **9**, **0**, and **0** keys.

The memory security mode will be canceled and the equipment returns to the calendar clock screen.

CHAPTER VI.

ERROR INDICATION AND TROUBLESHOOTING

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1. ERROR INDICATION

To help the user or the service personnel promptly locate the cause of a problem (if any), the facsimile equipment incorporates the self-diagnostic functions which display error messages for equipment errors and communications errors.

For the communications errors, the equipment also prints out the transmission verification report and the communications list.

1.1 Equipment Errors

If an equipment error occurs, the facsimile equipment emits an audible alarm (continuous beeping) for approximately 4 seconds and shows the error message on the LCD. For the error messages, see [1] below.

To display detailed error information, use the maintenance-mode function code 82 described in Chapter V, Section 3.11 (that is, make the equipment enter the maintenance mode and then press the **8** and **2** keys). Following the MACHINE ERROR, one of the error codes listed in [2] will appear on the LCD.

[1] Error messages on the LCD

Messages on the LCD	Probable Cause
CHECK PAPER	Even after paper pulling-in operation, the registration sensor does not detect paper.
COVER OPEN	The cover sensor detects that the top cover is not closed or the sheet feeder cover sensor detects that the sheet feeder cover is not closed.
PRINTER JAM	(1) The paper ejection sensor stays OFF even after the registration sensor has gone OFF and the paper has been fed by the specified amount. (2) The paper ejection sensor stays ON even after it has came ON and the paper has been fed by the specified amount.
DOCUMENT JAM	Document jam (1) The document length exceeds the limitation (400 or 90 cm) registered by firmware switch WSW16. (Refer to Chapter V, Section 3.5.) (Both the document front and rear sensors stay ON after the document has been fed by the registered length.) (2) The document rear sensor detects no trailing edge of a document after the document has been fed by 400 cm. (The document rear sensor stays ON even after the document has been fed when the document front and rear sensors were OFF and ON, respectively.)

Messages on the LCD	Probable Cause
DOCUMENT JAM	Document loading error (1) The document rear sensor detects no leading edge of a document within 10 seconds from the start of document loading operation. (The document rear sensor stays OFF even after the document has been fed when the document front sensor was ON.) (2) The loaded document is too short. (Since the document is shorter than the distance between the document front and rear sensors, the document front sensor is turned OFF before the document rear sensor is turned ON.)
CLEAN UP SCANNER	In the scanning compensation data list printed by the maintenance-mode function code 05, less than fifty percent of the white level data is faulty. (This message may appear only in the maintenance mode.)
SCANNER ERROR	In the scanning compensation data list printed by the maintenance-mode function code 05, fifty percent or more of the white level data is faulty. (This message may appear only in the maintenance mode.)
TONER LOW	The toner sensor has detected that there is not enough toner.
TONER EMPTY	The toner sensor has detected that there is no toner. If this message appears, recording is no longer possible.
SET CARTRIDGE	The toner sensor has detected that no toner cartridge is loaded.
COOLING DOWN ⇐ PLEASE WAIT ⇐ (Appear alternately.)	The toner thermister has detected that the toner temperature exceeded the specified level. If the temperature exceeds the preset level, recording is no longer possible.
MACHINE ERROR XX ⇐ PRESS STOP KEY ⇐ (Appear alternately.)	"XX" indicates an error code. Refer to [2] on pages VI-4 and VI-5.
CHANGE DRUM SOON	The service life of the drum unit will expire soon. This message appears for one minute. (You can turn this message indication on or off by the maintenance-mode function code 10, WSW30, selector 8. Refer to Chapter V, Section 3.5.)
PC BUSY OR FAIL	After connected with the host computer, the equipment has received no response from the computer. (A communications error has occurred.)

Messages on the LCD	Probable Cause
PLS OPEN COVER	To display the relating detailed error code, use maintenance-mode function code 82. (Refer to Chapter V, Section 3.11.) If this message appears, open and close the top cover. The message may disappear if opening/closing the top cover removes the error. If the error persists, the "MACHINE ERROR X X" will appear instead of this message.

If only an alarm beep is heard without any message on the LCD when the equipment is powered up, the ROM or RAM will be defective.

[2] Error codes shown in the "MACHINE ERROR X X " message

Error Code X X (Hex.)	Error factor
(71	Laser scanner motor does not lock.)
(72	Cannot detect Beam Detect signal.)
(73	No toner cartridge loaded.)
(74	Toner empty.)
(75	In-house temperature error.)
(76	Fixing heater harness disconnected or broken.)
(77	Heater thermister short circuit.)
(78	Heater thermister harness disconnected or broken.)
(79	Toner thermister disconnected or broken.)
(80	Paper size setting error.)
(82	Paper feeding error.)
(83	Paper jam. The registration sensor remains ON.)
(84	Paper jam. The paper ejection sensor remains ON.)
(88	Paper jam. Even after the registration sensor has gone OFF, the paper ejection sensor still stays OFF.)
(A1	Top cover opened.)
(A2	Document too long to scan.)
(A3	Document not detected by the document rear sensor.)
(A4	50% or more faulty of white level data.)
(A7	One-line feeding time-out error.)
(A8	One-line scanning time-out error.)
(A9	Abnormal scanning reference voltage.)
(AC	Less than 50% faulty of white level data.)

Error codes in parentheses do not appear in the "MACHINE ERROR X X", since those errors are displayed as messages described in "[1] Error messages on the LCD." Those error codes appear in the communications error list if an equipment error occurs during communications. Refer to Section 1.2, (13).

Error Code X X (Hex.)	Error factor
(B9	Light emission intensity error of the LED array.)
(D5	The MODEM fails to complete the command transmission sequence.)
(E4	Out of recording paper.)
E6	Write error in EEPROM.
(E8	Data scanning error during transmission.)
(EA	Document removed at phase B.)
F3	Voice message recording or playing-back not started.
(F5	EOL not found in page memory transmission mode.)
(F6	PC interface error.)

Error codes in parentheses do not appear in the "MACHINE ERROR X X", since those errors are displayed as messages described in "[1] Error messages on the LCD." Those error codes appear in the communications error list if an equipment error occurs during communications. Refer to Section 1.2, (13).

1.2 Communications Errors

If a communications error occurs, the facsimile equipment

① emits an audible alarm (intermittent beeping) for approximately 4 seconds,

② displays the corresponding error message, and

③ prints out the transmission verification report if the equipment is in sending operation.

Definition of Error Codes on the Communications List

(1) Calling

Code 1	Code 2	Causes
10	08	Wrong number called.
11	01	No dial tone detected before start of dialing.
11	02	Busy tone detected before dialing.
11	03	2nd dial tone not detected.
11	05	No loop current detected.*
11	06	Busy tone detected after dialing or called.
11	07	No response from the remote station in sending.
11	10	No tone detected after dialing.
17	07	No response from the calling station in receiving.

*Available in Germany and Austria only.

(2) Command reception

Code 1	Code 2	Causes
20	01	Unable to detect a flag field.
20	02	Carrier was OFF for 200 ms or longer.
20	03	Abort detected ("1" in succession for 7 bits or more).
20	04	Overrun detected.
20	05	A frame for 3 seconds or more received.
20	06	CRC error in answerback.
20	07	Undefined command received.
20	08	Invalid command received.
20	09	Command ignored once for document setting or for dumping-out at turn-around transmission.
20	0A	T5 time-out error
20	0B	CRP received.
20	0C	EOR and NULL received.

(3) Compatibility [checking the NSF and DIS]

Code 1	Code 2	Causes
32	01	Remote terminal only with V.29 capability in 2400 or 4800 bps transmission.
32	02	Remote terminal not ready for polling.
32	10	Remote terminal not equipped with password function or its password switch OFF.
32	11	Remote terminal not equipped with or not ready for confidential mail box function.
32	12	Remote terminal not equipped with or not ready for relay broadcasting function.
32	13	No confidential mail in the remote terminal.
32	14	The available memory space of the remote terminal is less than that required for reception of the confidential or relay broadcasting instruction.

(4) Instructions received from the remote terminal [checking the NSC, DTC, NSS, and DCS]

Code 1	Code 2	Causes
40	02	Illegal coding system requested.
40	03	Illegal recording width requested.
40	05	ECM requested although not allowed.
40	06	Polled while not ready.
40	07	No document to send when polled.
40	10	Nation code or manufacturer code not coincident.
40	11	Unregistered group code entered for relay broadcasting function, or the specified number of broadcasting subscribers exceeding the limit.
40	12	Retrieval attempted when not ready for retrieval.
40	13	Polled by any other manufacturers' terminal while waiting for secure polling.
40	17	Invalid resolution selected.

(5) Command reception [checking the NSF and DIS after transmission of NSS and DCS]

Code 1	Code 2	Causes
50	01	Vertical resolution capability changed after compensation of background color.

(6) ID checking

Code 1	Code 2	Causes
63	01	Password plus "lower 4 digits of telephone number" not coincident.
63	02	Password not coincident.
63	03	Polling ID not coincident.
63	04	Entered confidential mail box ID uncoincident with the mail box ID.
63	05	Relay broadcasting ID not coincident.
63	06	Entered retrieval ID uncoincident with that of the mail box ID.

(7) DCN reception

Code 1	Code 2	Causes
74		DCN received.

(8) TCF transmission/reception

Code 1	Code 2	Causes
80	01	Fallback impossible.

(9) Signal isolation

Code 1	Code 2	Causes
90	01	Unable to detect video signals and commands within 6 seconds after CFR is transmitted.
90	02	Received PPS containing invalid page count or block count.

(10) Video signal reception

Code 1	Code 2	Causes
A0	03	Error correction sequence not terminated even at the final transmission speed for fallback.
A0	11	Receive buffer empty. (5-second time-out)
A0	12	Receive buffer full during operation except receiving into memory.
A0	13	Decoding error continued on 500 lines.
A0	14	Decoding error continued for 10 seconds.
A0	15	Time-out: Five seconds or more for one-line transmission.
A0	16	RTC not found and carrier OFF signal detected for 6 seconds.
A0	17	RTC found but no command detected for 60 seconds.
A0	18	Receive buffer full during receiving into memory.
A8	01	RTN, PIN, or ERR received at the calling terminal.*
A9	01	RTN, PIN, or ERR received at the called terminal.*

* Available in Germany and Austria only

(11) General communications-related

Code 1	Code 2	Causes
B0	02	Unable to receive the next-page data.
B0	03	Unable to receive polling even during turn-around transmission due to call reservation.
B0	04	PC interface error.

(12) Maintenance mode

Code 1	Code 2	Causes
E0	01	Failed to detect 1300 Hz signal in burn-in operation.
E0	02	Failed to detect PB signals in burn-in operation.

(13) Equipment error

Code 1	Code 2	Causes
FF	X X	Equipment error (For X X, refer to Section 1.1 [2].)

2. TROUBLESHOOTING

2.1 Introduction

This section gives the service personnel some of the troubleshooting procedures to be followed if an error or malfunction occurs with the facsimile equipment. It is impossible to anticipate all of the possible problems which may occur in future and determine the troubleshooting procedures, so this section covers some sample problems. However, those samples will help service personnel pinpoint and repair other defective elements if he/she analyzes and examines them well.

2.2 Precautions

Be sure to observe the following to prevent the secondary troubles from happening:

(1) Always unplug the AC power cord from the outlet when removing the covers and PCBs, adjusting the mechanisms, or conducting continuity testing with a circuit tester.

(2) When disconnecting the connectors, do not pull the lead wires but hold the connector housings.

(3)
- Before handling the PCBs, touch a metal portion of the machine to discharge static electricity charged in your body.
- When repairing the PCBs, handle them with extra care.

After repairing the defective section, be sure to check again if the repaired section works correctly. Also record the troubleshooting procedure so that it would be of use for future trouble occurrence.

2.3 Checking prior to Troubleshooting

Prior to proceeding to the troubleshooting procedures, check that:

(1) Each voltage level on AC input lines and DC lines is correct.

(2) All cables and harnesses are firmly connected.

(3) None of the fuses are blown.

2.4 Troubleshooting Procedures

[1] Control panel related

Trouble	Check:
(1) LCD shows nothing.	• Panel-main harness between the main PCB and the control panel PCB • Control panel PCB • Low-voltage power supply PCB • Main PCB • LCD
(2) Control panel inoperative.	• Panel-main harness between the main PCB and the control panel PCB • Control panel PCB • FPC key • Main PCB

[2] Telephone related

Trouble	Check:
(1) No phone call can be made.	• FPC key • Control panel PCB • NCU PCB • Main PCB
(2) Speed dialing or one-touch dialing will not work.	• Ordinary dialing function (other than the speed and one-touch dialing) If it works normally, check the main PCB; if not, refer to item (1) above.
(3) Speaker silent during on-hook dialing.	• Ordinary dialing function (other than the on-hook dialing with the hook key) If it works normally, proceed to the following checks; if not, refer to item (1) above.
(4) Dial does not switch between tone and pulse.	• Main PCB
(5) Telephone does not ring.	• Speaker • NCU PCB • Main PCB

[3] Communications related

Trouble	Check:
(1) No tone is transmitted.	• Main PCB • NCU PCB

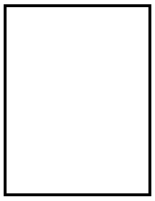
[4] Paper/document feeding related

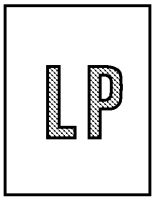
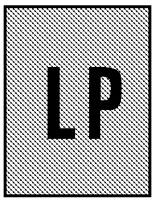
Trouble	Check:
(1) Neither "COPY: PRESS COPY" nor "FAX: NO. & START" message appears although documents are set.	• Sensors by using the maintenance-mode function code 32. (Refer to Chapter V, Section 3.8.) • Document front sensor actuator and document rear sensor actuator • Main PCB
(2) Document not fed.	• ADF and its related sections • Scanner motor and its harness • Document feed rollers and their related gears • Main PCB
(3) Document double feeding	• ADF parts
(4) Recording paper not fed.	• Multi-purpose sheet feeder • Drum unit • Heat-fixing unit • Gear drive unit • Main PCB

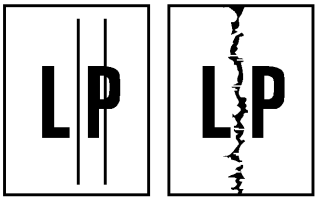
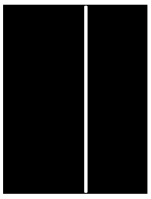
[5] Print-image related

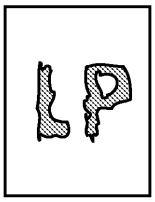
If the received or sent image has any problem, first make a copy with the facsimile equipment.

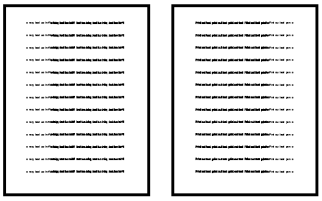
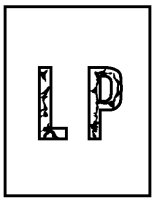
If the copied image is normal, the problem may be due to the remote terminal; if it is abnormal, proceed to the following checks:

Trouble	Action to be taken
(1) Completely blank 	<u>At the scanner</u> Check the following components: - CIS harness - Main PCB - CIS unit <u>At the printer side</u> ● Clean the high-voltage contacts for the developer roller on the drum unit, main cover, and high-voltage power supply PCB. (Contacts in the illustration given on page VI-21) ● Check the connection of the laser diode harness on the main PCB. ● Replace the main PCB.
(2) All black	<u>At the scanner</u> Check the following components: - CIS harness - CIS unit - Main PCB <u>At the printer side</u> ● Clean the high-voltage contacts for the grid and corona wire on the drum unit, main cover, and high-voltage power supply PCB. (Contacts and in the illustration given on page VI-21) ● Check the connection of the main–high-voltage flat cable. ● Replace the drum unit. ● Replace the main PCB.

Trouble	Action to be taken
(3) Light  	<u>At the scanner</u> Check the following components: - CIS unit - Main PCB <u>At the printer side</u> • Replace the toner cartridge with a new one and print 4 to 5 pages. If the problem persists, proceed to the next step. • Remove the toner cartridge and start printing. If printing takes place, clean the toner sensor or replace the toner sensor PCB. • Clean the high-voltage contacts for the transfer roller on the drum unit, main cover, and high-voltage power supply PCB. (Contacts in the illustration given on page VI-21) • Clean the high-voltage contacts for the developer roller on the drum unit, main cover, and high-voltage power supply PCB. (Contacts in the illustration given on page VI-21) • Clean the grounding contacts on the drum unit, gear drive unit, and main cover. (Contacts and in the illustration given on page VI-21) • Check the connection of the main–high-voltage flat cable. • Replace the drum unit. • Replace the high-voltage power supply PCB. • Replace the main PCB.
(4) Dark  	<u>At the scanner</u> Check the following components: - CIS unit - Main PCB <u>At the printer side</u> • Slide the wire cleaner tab to clean the corona wire inside the drum unit. • Clean the high-voltage contacts for the grid and corona wire on the drum unit, main cover, and high-voltage power supply PCB. (Contacts and in the illustration given on page VI-21) • Replace the drum unit.

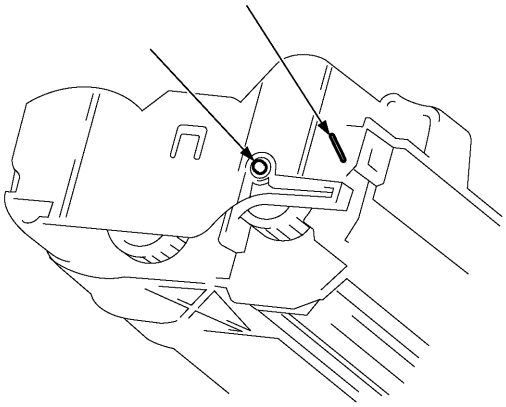
Trouble	Action to be taken
(5) Black and blurred vertical stripes 	<u>At the scanner</u> Check the following components: - CIS unit <u>At the printer side</u> • Clean the paper path which may be contaminated with toner. • Slide the wire cleaner tab to clean the corona wire inside the drum unit. • Make sure that the wire cleaner tab is returned to its home position. • Replace the drum unit. • Replace the heat-fixing unit.
(6) Black and blurred horizontal stripes 	<u>At the printer side</u> • If the horizontal stripes appear at 94-mm or 17-mm intervals, replace the drum unit. • If they appear at 54-mm intervals, replace the heat-fixing unit.
(7) White vertical streaks 	<u>At the scanner</u> Check the following components: - CIS unit <u>At the printer side</u> • Replace the drum unit.
(8) Dropout 	<u>At the printer side</u> • Check the connection of the main–high-voltage flat cable. • Replace the drum unit. • Replace the high-voltage power supply PCB.

Trouble	Action to be taken
(9) Faulty image registration (Leading edge of image starts too late on paper) 	<u>At the printer side</u> ● Instruct the user not to load paper exceeding the limit mark on the multi-purpose sheet feeder. ● Instruct the user to use the recommended types of paper. ● Replace the multi-purpose sheet feeder. ● Replace the gear drive unit.
(10) Image distortion or improper image alignment 	<u>In communications</u> Check the following components: - Error code displayed. (Refer to Section 1, ”ERROR INDICATION" in this chapter.) - NCU PCB - Main PCB <u>At the scanner</u> Check the following components: - Separator roller and its related sections - Document feed rollers and their related gears - Scanner motor and its harness - Main PCB <u>At the printer side</u> ● Check that the laser unit is secured with the screws without looseness. ● Check the connection of the polygon motor flat cable on the main PCB. ● Replace the laser unit.

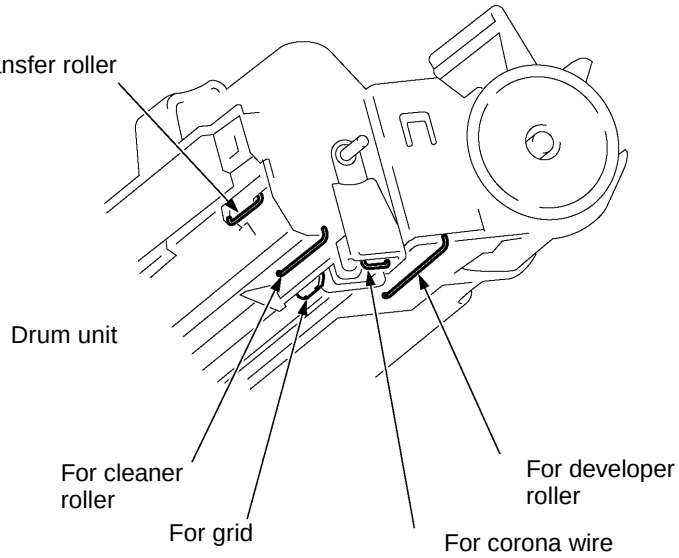
Trouble	Action to be taken
(11) Blurred at either side 	<u>At the printer side</u> ● Shake the toner cartridge. If the problem persists, replace it. ● Check that the equipment is placed on a flat surface. ● Shake the drum unit from left to right and front to back.
(12) Dirt back of paper 	<u>At the printer side</u> ● Replace the drum unit. ● Replace the heat-fixing unit.
(13) Poor fixing 	<u>At the printer side</u> ● Instruct the user to use paper of the recommended weight (less than 36 lb./m^2). ● Replace the heat-fixing unit.

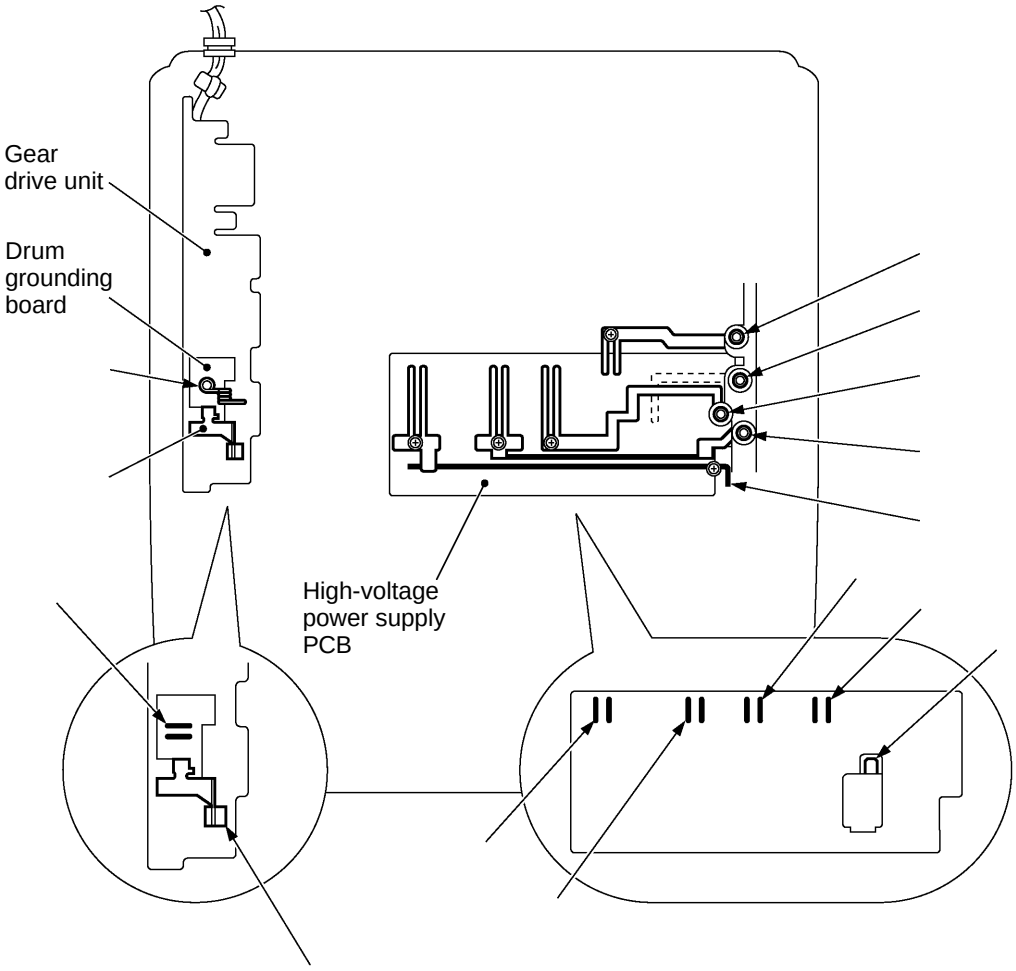
Location of High-voltage Contacts and Grounding Contacts

Grounding Contacts



High-voltage Contacts





July ’98
5X5301
Printed in Japan

FAX2750/FAX-8250P
MFC4350/MFC4650/MFC6650MC
MFC-9050/MFC-9550
LJ6106MFC/LJ6206MFC/L621

Appendix 1. EEPROM Customizing Codes

EEPROM Customizing Codes

This function allows you to customize the EEPROM according to language, function settings, and firmware switch settings.

■ Operating Procedure

(1) FAX2750/MFC4350/MFC4650/MFC6650MC/L621/LJ6106MFC/LJ6206MFC: To make the equipment enter the maintenance mode, press the **Function**, *****, **2**, **8**, **6**, and **4** keys in this order.

← Within 2 seconds →

FAX-8250P/MFC-9050/MFC-9550: To make the equipment enter the maintenance mode, press the **Menu**, *****, **2**, **8**, **6**, and **4** keys in this order.

←Within 2 seconds→

The equipment beeps for approx. one second and displays "▮▮ MAINTENANCE ▮▮▮" on the LCD.

(2) Press the **7** and **4** keys in this order in the initial stage of the maintenance mode.

The current customizing code (e.g., 1101 in the case of MFC4350 U.S.A. versions) appears.

(3) Enter the desired customizing code (e.g., 0202 in the case of MFC4650 Canadian versions).

The newly entered code appears.

NOTE: *If a wrong 4-digit code is entered, the equipment will malfunction.*

(4) Press the **Start** key.

The equipment saves the setting and returns to the initial stage of the maintenance mode.

If you press the **Stop** key or no keys are pressed for one minute in the above procedure, the equipment stops the procedure and returns to the initial stage of the maintenance mode.

■ EEPROM Customizing Codes List

(1) FAX2750/MFC4350/MFC4650/MFC6650MC

Versions	Model			
	FAX2750	MFC4350	MFC4650	MFC6650MC
U.S.A.	1001	1101	1201	1001
CANADA	0002	0102	0202	0002
ASIA	0040			0040
AUSTRALIA	0006			0006
INDONESIA	0040			0040
GULF	0001			0001
NEW ZEALAND	0027			0027
TAIWAN	0023			0023
S. AMERICA			0201	
SOUDI ARABIA				0001
RUSSIA				0001

(2) LJ6106MFC/LJ6206MFC/L621

Versions	Model		
	LJ6106MFC	LJ6206MFC	L621
CHINA	0120	0020	
U.S.A. (OEM)			0001

(3) FAX-8250P/MFC-9050/MFC-9550

Versions	Model		
	FAX-8250P	MFC-9050	MFC-9550
GERMANY	0003	0103	0003
U.K.	0004	0104	0004
FRANCE	0005	0105	0005
NORWAY	0007	0107	0007
BELGIUM		0108	0008
NETHERLANDS		0109	0009
SWITZERLAND	0010	0110	0010
IRELAND	0011	0111	
FINLAND		0112	0012
DENMARK	0013	0113	
AUSTRIA	0014	0114	
SPAIN		0115	0015
ITALY		0116	0016
SWEDEN	0026	0126	0026
EURO GENERIC		0104	

FAX2750/FAX-8250P
MFC4350/MFC4650/MFC6650MC
MFC-9050/MFC-9550

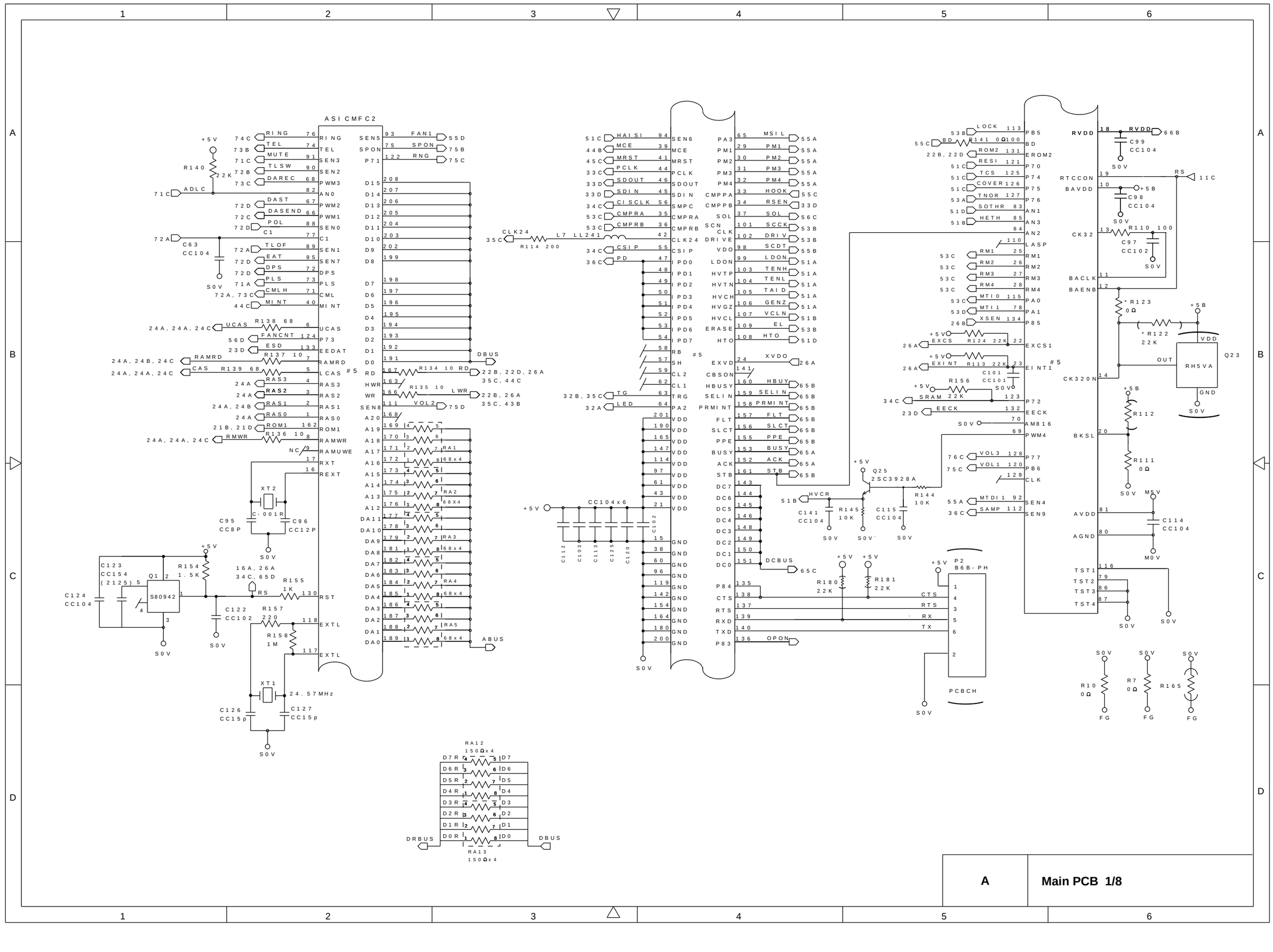
Appendix 2. Circuit Diagrams

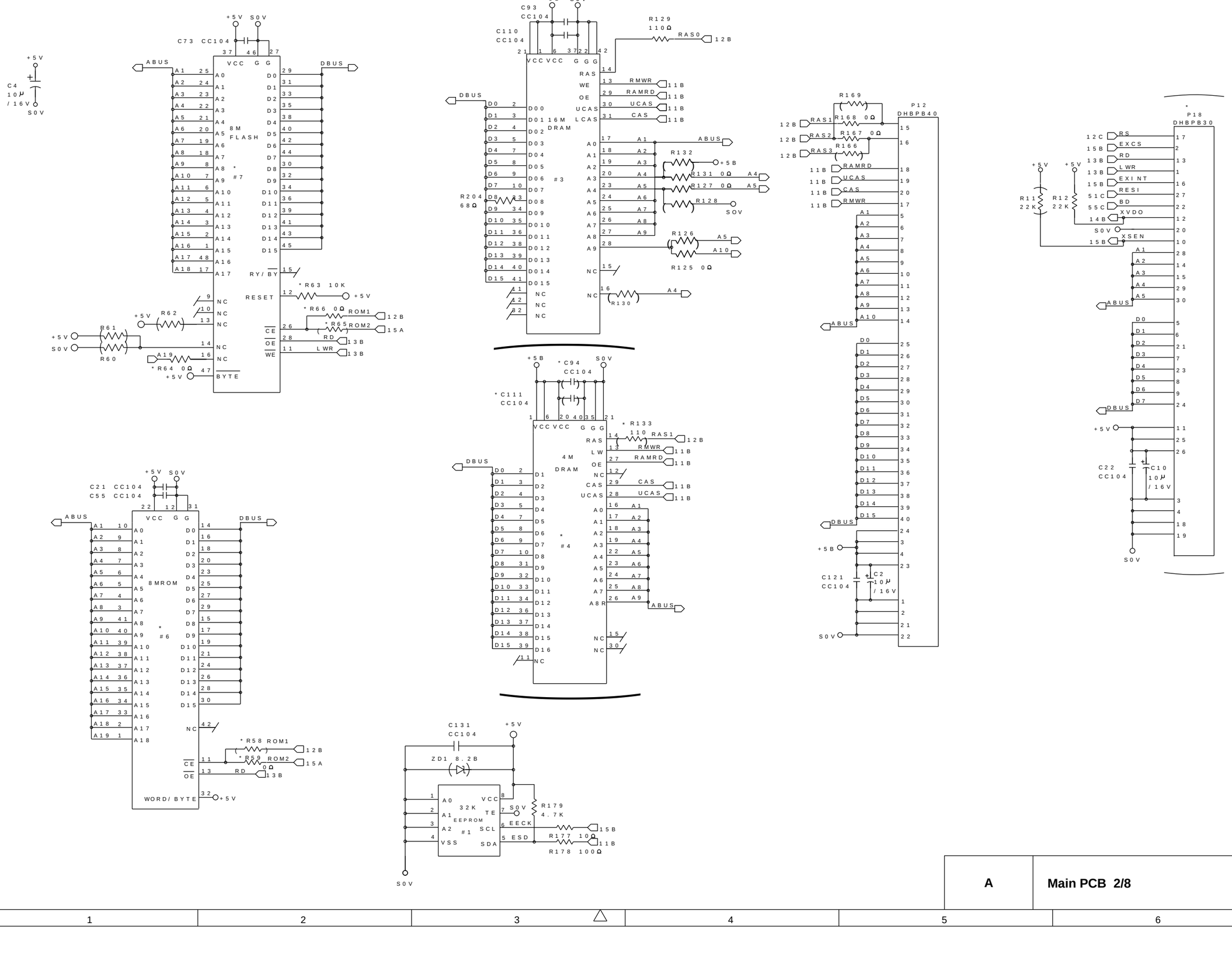
A. Main PCB
B. Network Control Unit (NCU) PCB
C. Control Panel PCB
D. Power Supply PCBs

FAX2750/FAX-8250P
MFC4350/MFC4650/MFC6650MC
MFC-9050/MFC-9550

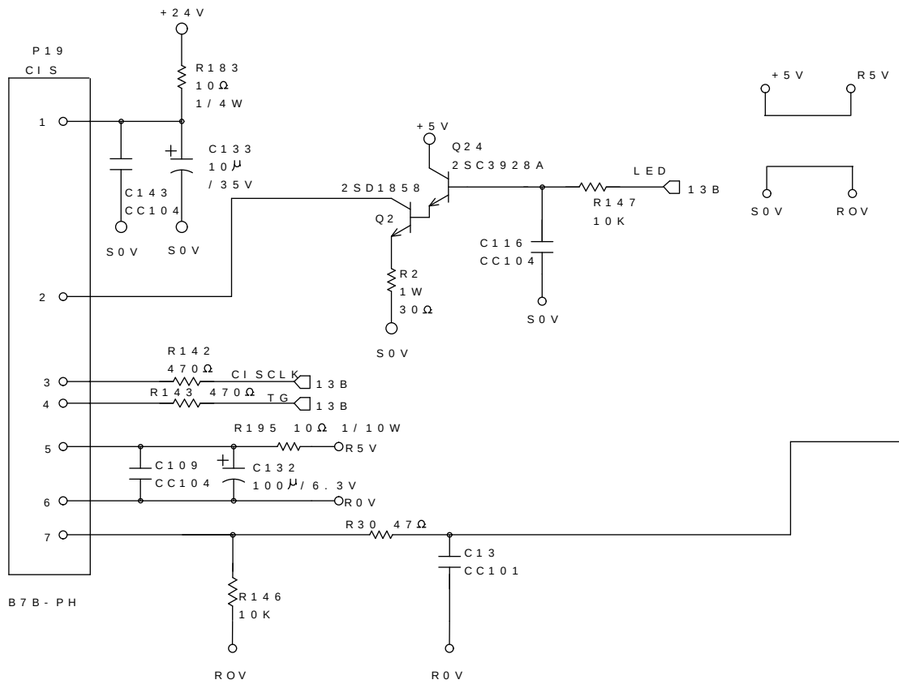
Appendix 2. Circuit Diagrams

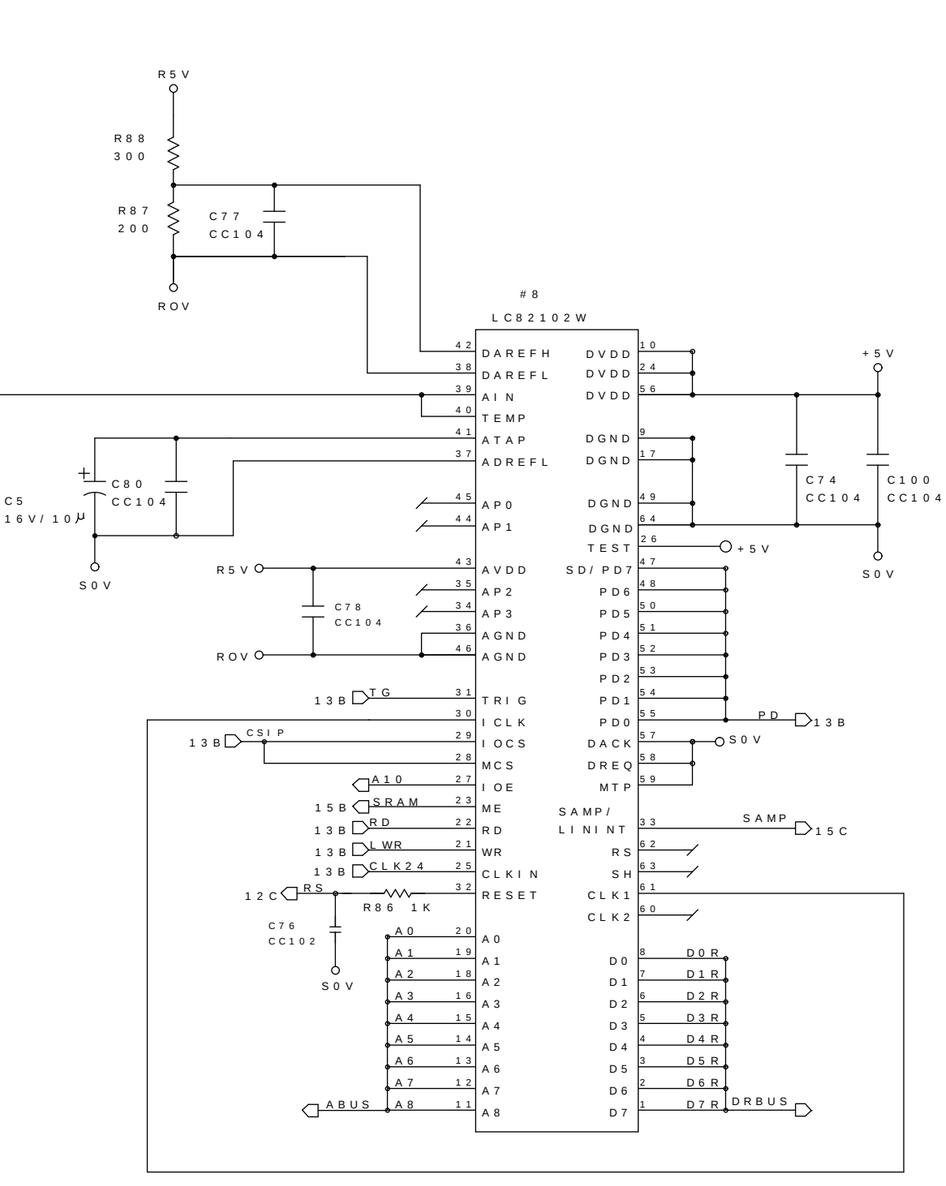
A. Main PCB
B. Network Control Unit (NCU) PCB
C. Control Panel PCB
D. Power Supply PCBs

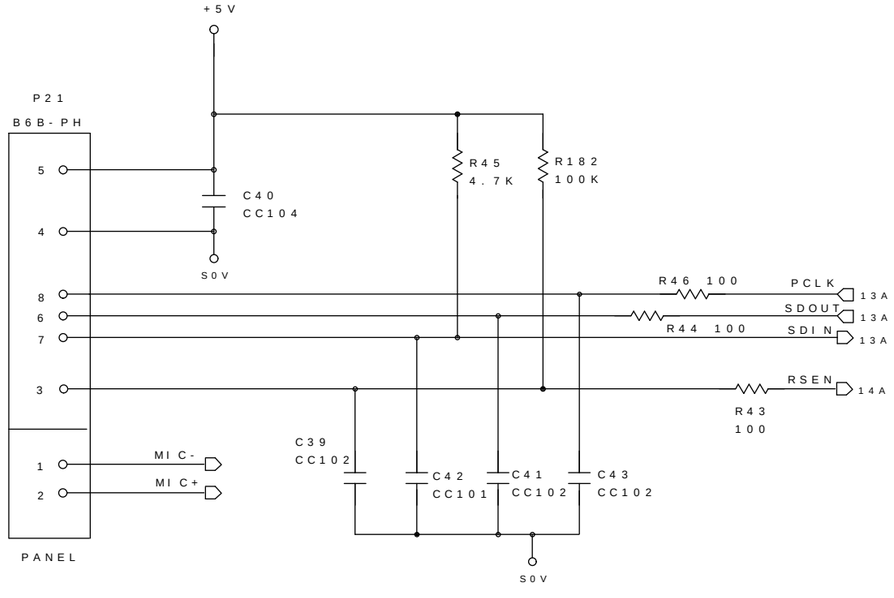

ASICMFC2
RING
TEL
MUTE
TLSW
DAREC
ADLC
DAST
DASEND
POL
C1
TLOF
EAT
DPS
PLS
CMLH
MINT
UCAS
FANCNT
ESD
RAMRD
CAS
RAS3
RAS2
RAS1
RAS0
ROM1
RMWR
NC
RXT
REXT
XT2
C-001R
C95 CC8P
C96 CC12P
C123 CC154 (2125)
Q1
S80942
C124 CC104
C122 CC102
R154 1.5K
R155 1K
RS
R157 220
R158 1M
EXTL
RST
XT1
24.57MHz
C126 CC15p
C127 CC15p
SEN5
SPON
P71
FAN1
SPON
RNG
VOL2
SEN8
DBUS
RD
LWR
HWR
ABUS
RA1
RA2
RA3
RA4
RA5
68x4
RA12
150Ωx4
RA13
150Ωx4
DRBUS
HAISI
MCE
MRST
PCLK
SDOUT
SDIN
CISCLK
CMPRA
CMPRB
CLK24
CSIP
PD
SEN6
CMPPA
CMPPB
SCN
CLK DRIVE
SCDT
LDON
TENH
TENL
TAID
GENZ
VCLN
EL
HTO
XVDO
CBSON
HBUSY
SELIN
PRMINT
FLT
SLCT
PPE
BUSY
ACK
STB
MSIL
SOL
SCCK
DRIV
VDO
HVTP
HVTN
HVCH
HVGZ
HVCL
ERASE
PA3
PM1
PM2
PM3
PM4
HOOK
RSEN
I PD0
I PD1
I PD2
I PD3
I PD4
I PD5
I PD6
I PD7
RB
SH
CL2
CL1
TRG
LED
VDD
GND
CC104x6
C102
C112
C103
C113
C125
C120
L7 LL241
R114 200
DCBUS
P84
CTS
RTS
RXD
TXD
P83
OPON
HVCR
Q25 2SC3928A
R144 10K
R145 10K
C141 CC104
C115 CC104
R180 22K
R181 22K
P2 B6B-PH
PCBCH
LOCK
R141 0Ω
ROM2
RESI
TCS
COVER
TNOR
SOTHR
HETH
LASP
RM1
RM2
RM3
RM4
MTI0
MTI1
XSEN
EXCS
R124 22K
EXINT
R113 22K
C101 CC101
R156
SRAM 22K
EECK
AM816
PWM4
VOL3
VOL1
CLK
MTDI1
SAMP
SEN4
SEN9
PB5
BD
EROM2
P70
P74
P75
P76
AN1
AN3
AN2
RM1
RM2
RM3
RM4
PA0
PA1
P85
EXCS1
EINT1
P72
EECK
P77
PB6
SEN4
SEN9
RVDD
C99 CC104
RTCCON
BAVDD
C98 CC104
CK32
R110 100
C97 CC102
BACLK
BAENB
R123 0Ω
R122 22K
VDD
OUT
Q23
RH5VA
GND
CK320N
R112
BKSL
R111 0Ω
AVDD
C114 CC104
AGND
TST1
TST2
TST3
TST4
R10 0Ω
R7 0Ω
R165
FG
A
Main PCB 1/8


C4 10µ / 16V
8M FLASH
8MROM
4M DRAM
EEPROM #1
P12 DHBPB40
P18 DHBPB30
ABUS
DBUS
RESET
RY/BY
BYTE
WORD/BYTE
RAS0
RAS1
RAS2
RAS3
RMWR
RAMRD
UCAS
LCAS
CAS
RD
LWR
ROM1
ROM2
EECK
ESD
RS
EXCS
RD
LWR
EXINT
RESI
BD
XVDO
XSEN
ZD1 8.2B
S0V
+5V
+5B

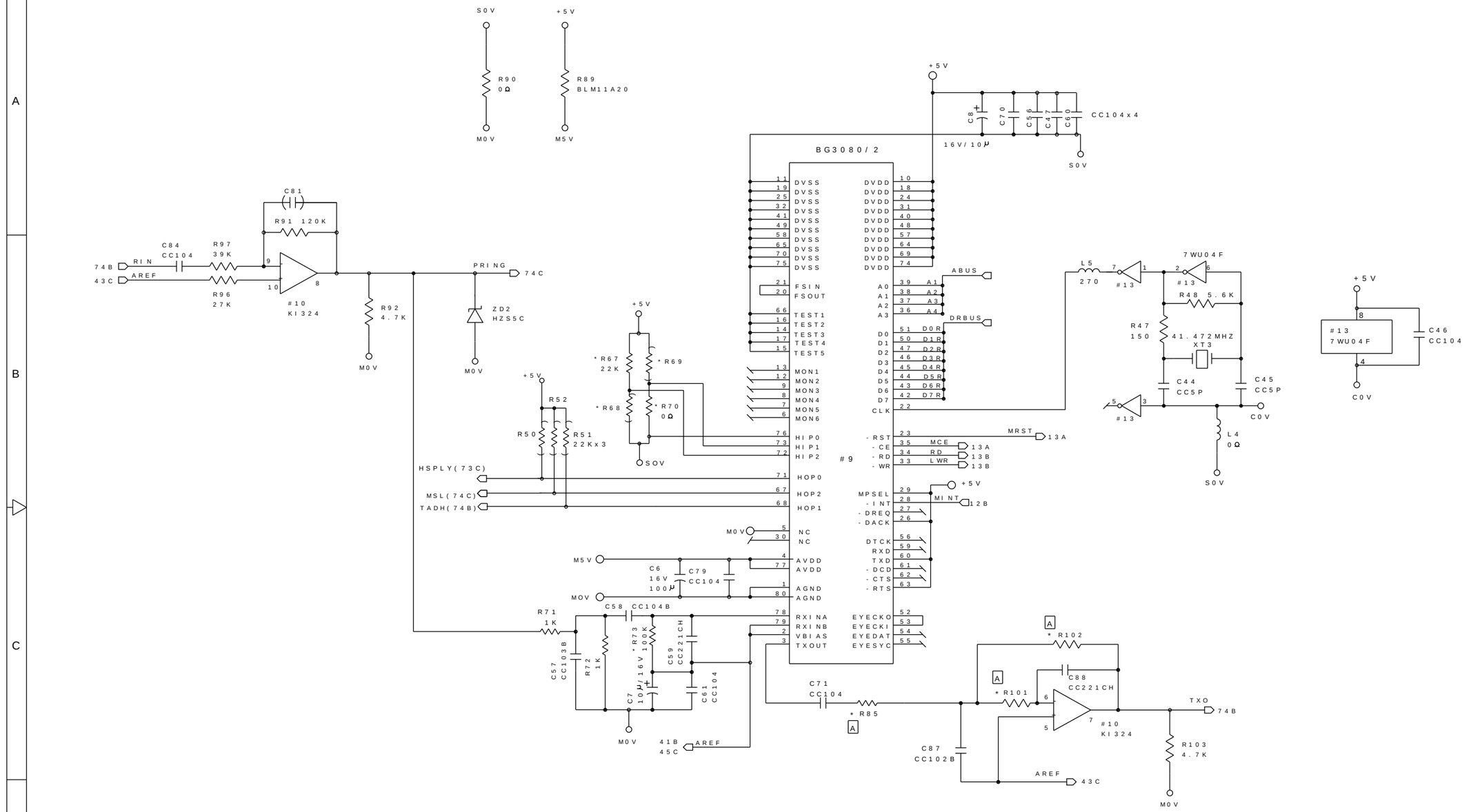
A	Main PCB 2/8


+24V
P19
CIS
R183
10Ω
1/4W
C133
10μ
/35V
C143
CC104
S0V
S0V
+5V
Q24
2SC3928A
LED
13B
2SD1858
Q2
R147
10K
C116
CC104
R2
1W
30Ω
S0V
S0V
R142
470Ω
CISCLK
13B
R143 470Ω
TG
13B
R195 10Ω 1/10W
R5V
C109
CC104
C132
100μ/6.3V
R0V
R30 47Ω
C13
CC101
R146
10K
B7B-PH
ROV
R0V

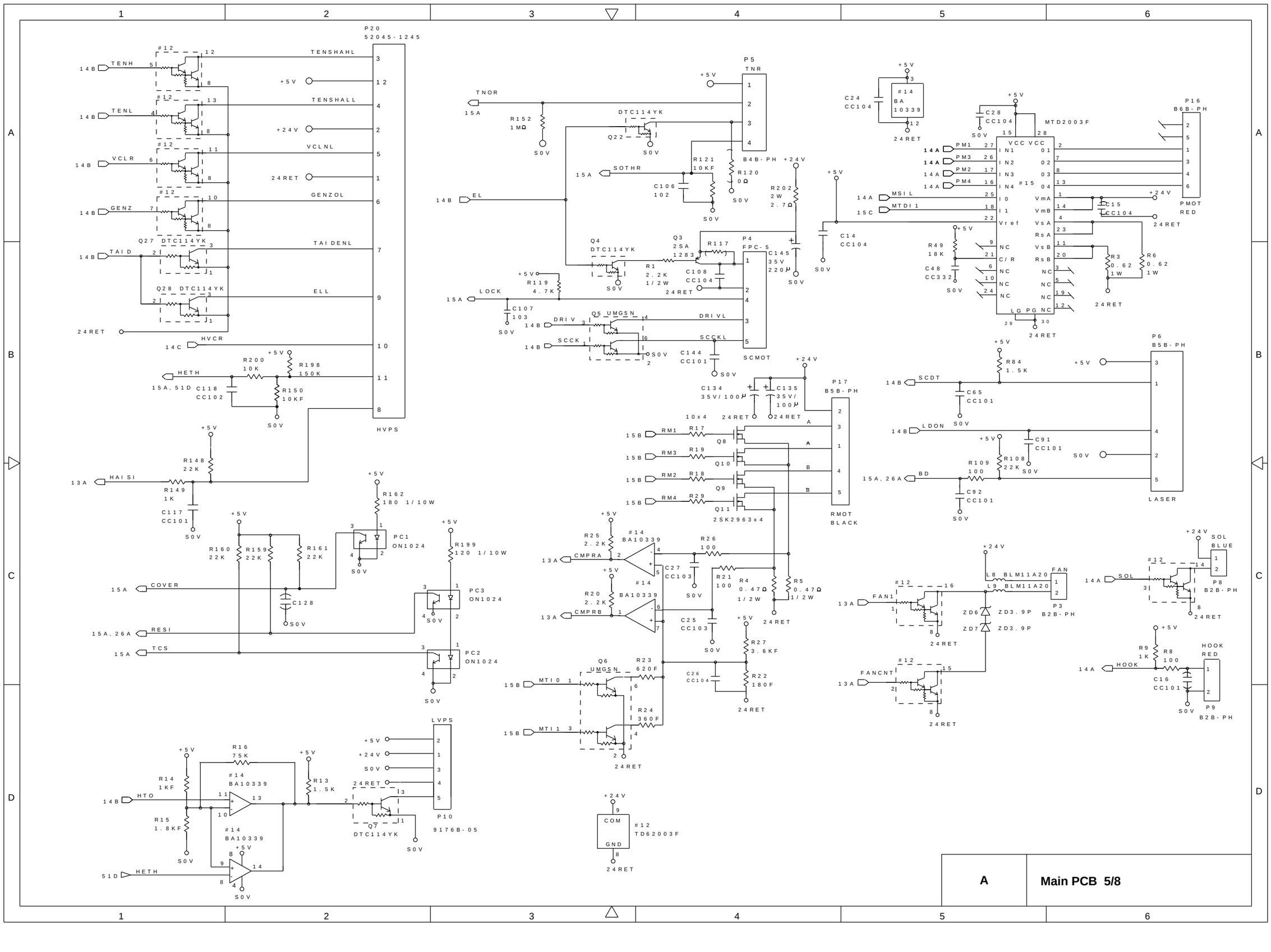

+5V
R5V
S0V
ROV
R5V
R88
300
R87
200
C77
CC104
ROV
#8
LC82102W
DAREFH
DAREFL
AIN
TEMP
ATAP
ADREFL
AP0
AP1
AVDD
AP2
AP3
AGND
AGND
TRIG
ICLK
IOCS
MCS
IOE
ME
RD
WR
CLKIN
RESET
A0
A1
A2
A3
A4
A5
A6
A7
A8
DVDD
DVDD
DVDD
DGND
DGND
DGND
DGND
TEST
SD/PD7
PD6
PD5
PD4
PD3
PD2
PD1
PD0
DACK
DREQ
MTP
SAMP/
LININT
RS
SH
CLK1
CLK2
D0
D1
D2
D3
D4
D5
D6
D7
C5
16V/10μ
C80
CC104
C78
CC104
C74
CC104
C100
CC104
+5V
S0V
+5V
S0V
S0V
PD
13B
SAMP
15C
D0R
D1R
D2R
D3R
D4R
D5R
D6R
D7R
DRBUS
13B TG
13B CSIP
15B SRAM
13B RD
13B LWR
13B CLK24
12C RS
R86 1K
C76
CC102
S0V
A10
ABUS


+5V
P21
B6B-PH
C40
CC104
S0V
R45
4.7K
R182
100K
R46 100
PCLK
13A
SDOUT
13A
R44 100
SDIN
13A
RSEN
14A
R43
100
MIC-
MIC+
PANEL
C39
CC102
C42
CC101
C41
CC102
C43
CC102
S0V

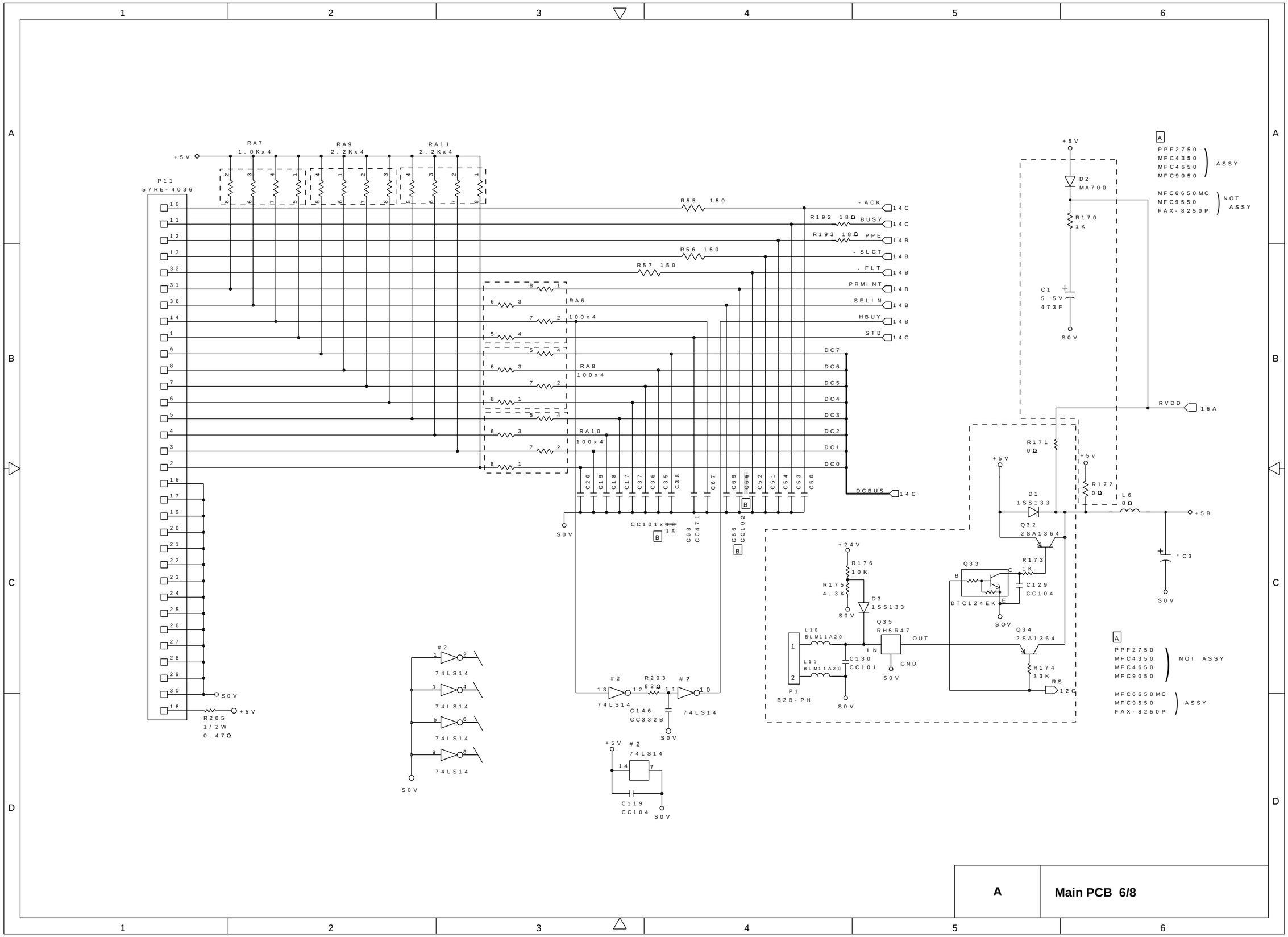
A	Main PCB 3/8


S0V
+5V
R90 0Ω
R89 BLM11A20
M0V
M5V
BG3080/2
+5V
C8 16V/10μ
C70
C56
C47
C60
CC104x4
S0V
C81
R91 120K
C84 CC104
R97 39K
74B RIN
43C AREF
R96 27K
9
10
8
#10 KI324
R92 4.7K
PRING
74C
ZD2 HZS5C
M0V
M0V
+5V
*R67 22K
*R69
*R68
*R70 0Ω
SOV
+5V
R52
R50
R51 22Kx3
HSPLY(73C)
MSL(74C)
TADH(74B)
DVSS
DVDD
FSIN
FSOUT
TEST1
TEST2
TEST3
TEST4
TEST5
MON1
MON2
MON3
MON4
MON5
MON6
HIP0
HIP1
HIP2
HOP0
HOP2
HOP1
NC
NC
AVDD
AVDD
AGND
AGND
RXINA
RXINB
VBIAS
TXOUT
A0
A1
A2
A3
D0
D1
D2
D3
D4
D5
D6
D7
CLK
ABUS
DRBUS
D0R
D1R
D2R
D3R
D4R
D5R
D6R
D7R
#9
-RST
-CE
-RD
-WR
MRST
13A
MCE
RD
LWR
13A
13B
13B
MPSEL
-INT
-DREQ
-DACK
+5V
MINT
12B
DTCK
RXD
TXD
-DCD
-CTS
-RTS
EYECKO
EYECKI
EYEDAT
EYESYC
M0V
M5V
C6 16V 100μ
C79 CC104
MOV
C58 CC104B
R71 1K
C57 CC103B
R72 1K
*R73 100K
C59 CC221CH
C7 10μ/16V
C61 CC104
M0V
41B
45C
AREF
C71 CC104
*R85
A
L5 270
7WU04F
#13
R48 5.6K
R47 150
41.472MHZ XT3
C44 CC5P
C45 CC5P
C0V
L4 0Ω
S0V
+5V
#13
7WU04F
C46 CC104
C0V
A
*R102
C88 CC221CH
A
*R101
C87 CC102B
AREF
43C
TXO
74B
#10 KI324
R103 4.7K
M0V

A	Main PCB 4/8


P20
52045-1245
TENSHAHL
TENSHALL
VCLNL
GENZOL
TAI DENL
ELL
HVCR
HETH
HVPS
TENH
TENL
VCLR
GENZ
TAI D
Q27 DTC114YK
Q28 DTC114YK
24RET
+5V
+24V
S0V
R198 150K
R200 10K
R150 10KF
C118 CC102
HAI SI
R148 22K
R149 1K
C117 CC101
R160 22K
R159 22K
R161 22K
R162 180 1/10W
R199 120 1/10W
PC1 ON1024
PC2 ON1024
PC3 ON1024
COVER
RESI
TCS
C128
P5
TNR
TNOR
R152 1MΩ
DTC114YK
Q22
R121 10KF
B4B-PH
R120 0Ω
SOTHR
C106 102
EL
R202 2W 2.7Ω
Q4 DTC114YK
Q3 2SA 1283
R117
R1 2.2K 1/2W
C108 CC104
P4 FPC-5
C145 35V 220μ
R119 4.7K
LOCK
C107 103
DRIV
SCCK
Q5 UMG5N
DRIVL
SCCKL
C144 CC101
SCMOT
C24 CC104
#14 BA10339
24RET
C28 CC104
MTD2003F
VCC VCC
PM1
PM3
PM2
PM4
MSIL
MTDI1
Vref
NC
C/R
LG PG
#15
P16
B6B-PH
PMOTRED
C15 CC104
R49 18K
C48 CC332
R3 0.62 1W
R6 0.62 1W
C14 CC104
C134 35V/100μ
C135 35V/100μ
10x4
P17
B5B-PH
RMOTBLACK
RM1
RM3
RM2
RM4
R17
R19
R18
R29
Q8
Q10
Q9
Q11
2SK2963x4
P6
B5B-PH
LASER
R84 1.5K
SCDT
C65 CC101
LDON
C91 CC101
R108 22K
R109 100
BD
C92 CC101
R25 2.2K
R26 100
CMPRA
C27 CC103
R21 100
R4 0.47Ω 1/2W
R5 0.47Ω 1/2W
R20 2.2K
CMPRB
C25 CC103
R27 3.6KF
R23 620F
R24 360F
Q6 UMG5N
MTI0
MTI1
C26 CC104
R22 180F
TD62003F
COM
GND
FAN
FAN1
FANCNT
ZD6
ZD7
ZD3.9P
L8 BLM11A20
L9 BLM11A20
P3
B2B-PH
SOL
SOLBLUE
P8
B2B-PH
HOOK
HOOKRED
P9
B2B-PH
R9 1K
R8 100
C16 CC101
R16 75K
R14 1KF
R15 1.8KF
R13 1.5K
HTO
HETH
Q7 DTC114YK
LVPS
P10
9176B-05

A	Main PCB 5/8


RA7
1.0Kx4
RA9
2.2Kx4
RA11
2.2Kx4
+5V
P11
57RE-4036
R55 150
R56 150
R57 150
R192 18Ω
R193 18Ω
-ACK
BUSY
PPE
-SLCT
-FLT
PRMINT
SELIN
HBUY
STB
14C
14B
RA6
RA8
RA10
100x4
DC7
DC6
DC5
DC4
DC3
DC2
DC1
DC0
DCBUS
C20 C19 C18 C17 C37 C36 C35 C38 C68 C67 C69 C66 C52 C51 C54 C53 C50
CC471 CC102
CC101x15
S0V
R205
1/2W
0.47Ω
74LS14
C146
CC332B
R203
82Ω
C119
CC104
D2
MA700
R170
1K
C1
5.5V
473F
RVDD
16A
R171
0Ω
R172
0Ω
L6
0Ω
D1
1SS133
Q32
2SA1364
+5B
*C3
R176
10K
R175
4.3K
D3
1SS133
Q35
RH5R47
IN
OUT
GND
L10
BLM11A20
L11
BLM11A20
C130
CC101
P1
B2B-PH
Q33
DTC124EK
R173
1K
C129
CC104
Q34
2SA1364
R174
33K
RS
12C
PPF2750
MFC4350
MFC4650
MFC9050
ASSY
MFC6650MC
MFC9550
FAX-8250P
NOT ASSY
NOT ASSY
MFC6650MC
MFC9550
FAX-8250P
ASSY

A	Main PCB 6/8

Main PCB 7/8

A

NCU1 P14
B12B-PH

NCU2 P13
B6B-PH

NOT ASSY

for Europian NCU
MFC9050
FAX-8250P
MFC9550

MFC6650MC
MFC9550
ASSY

PPF2750
MFC4350
MFC4650
MFC9050
FAX-8250P
NOT ASSY

PAGE	ITEM	PPF2750 MFC4350 MFC4650	MFC4350 DEMO MFC4650 DEMO	MFC6650MC	MFC9050	FAX-8250P	MFC9550
1	R123	0Ω	0Ω	NOT ASSY	0Ω	NOT ASSY	NOT ASSY
	R122	NOT ASSY	NOT ASSY	22K	NOT ASSY	22K	22K
2	#6	IC SOCKET	IC SOCKET	B ~~IC SOCKET NOT ASSY~~	IC SOCKET	IC SOCKET	IC SOCKET
	#7	NOT ASSY	4M Flash Memory	B ~~8~~4M Flash Memory	4M Flash Memory	4M Flash Memory	4M Flash Memory
	R59	NOT ASSY	0Ω	B ~~NOT ASSY~~ 0Ω	0Ω	0Ω	0Ω
	R64	NOT ASSY	NOT ASSY	B ~~0Ω~~ NOT ASSY	NOT ASSY	NOT ASSY	NOT ASSY
4	R67	22K	22K	NOT ASSY	NOT ASSY	NOT ASSY	NOT ASSY
	R68	NOT ASSY	NOT ASSY	0Ω	0Ω	0Ω	0Ω
	R69	NOT ASSY	NOT ASSY	22K	NOT ASSY	22K	22K
	R70	0Ω	0Ω	NOT ASSY	0Ω	NOT ASSY	NOT ASSY
	R85, R101	56kΩ	56kΩ	56KΩ	56kΩ(F)	56kΩ(F)	56kΩ(F)
	R102	75kΩ	75kΩ	75kΩ	75kΩ(F)	75kΩ(F)	75kΩ(F)
6	C3	EC 10V 100μF	EC 10V 100μF	EC 10V 330μF	EC 10V 100μF	EC 10V 330μF	EC 10V 330μF
7	P13	NOT ASSY	NOT ASSY	NOT ASSY	B6B-PH	B6B-PH	B6B-PH
	ZD3, ZD4	MTZJ2.0	MTZJ2.0	MTZJ2.0	HZS2.7N	HZS2.7N	HZS2.7N
	#16	NOT ASSY	NOT ASSY	74HC4053	NOT ASSY	NOT ASSY	74HC4053
	R33	0Ω	0Ω	NOT ASSY	0Ω	0Ω	NOT ASSY
	R34	NOT ASSY	NOT ASSY	3KΩ	NOT ASSY	NOT ASSY	3KΩ
	R35	0Ω	0Ω	NOT ASSY	0Ω	0Ω	NOT ASSY
	R36	0Ω	0Ω	NOT ASSY	0Ω	0Ω	NOT ASSY
	R37	390Ω	390Ω	2.4KΩ	390Ω	390Ω	2.4KΩ
	R38	3.9KΩ	3.9KΩ	8.2KΩ	3.9KΩ	3.9KΩ	8.2KΩ
	R41, R74	1.5KΩ	1.5KΩ	1.5KΩ	1.5KΩ(F)	1.5KΩ(F)	1.5KΩ(F)
	R75	4.7kΩ	4.7kΩ	4.7KΩ	680Ω	680Ω	680Ω
	R76	1kΩ	1kΩ	1kΩ	680Ω	680Ω	680Ω
	R79	1kΩ	1kΩ	1kΩ	22kΩ	22kΩ	22kΩ
	R80	22kΩ	22kΩ	22kΩ	120kΩ	120kΩ	120kΩ
	R93	10kΩ	10kΩ	10kΩ	7.5kΩ(F)	7.5kΩ(F)	7.5kΩ(F)
	R94	56kΩ	56kΩ	56kΩ	56kΩ(F)	56kΩ(F)	56kΩ(F)
	R99	200kΩ	200kΩ	200kΩ	130kΩ(F)	130kΩ(F)	130kΩ(F)
	R104	2.2KΩ	2.2KΩ	2.2KΩ	680Ω(F)	680Ω(F)	680Ω(F)
	R105	1kΩ	1kΩ	1kΩ	1kΩ(F)	1kΩ(F)	1kΩ(F)
	R106	100kΩ	100kΩ	100kΩ	39kΩ(F)	39kΩ(F)	39kΩ(F)
	R115, R116	NOT ASSY	NOT ASSY	NOT ASSY	10kΩ	10kΩ	10kΩ
	R118	150kΩ	150kΩ	150kΩ	180kΩ	180kΩ	180kΩ
	C89	CC102B	CC102B	CC102B	NOT ASSY	NOT ASSY	NOT ASSY
	C104, C105	NOT ASSY	NOT ASSY	NOT ASSY	CC104	CC104	CC104

A	Main PCB 8/8

1．指示ナキ抵抗ノ消費電力ハ1／4Wトスル。

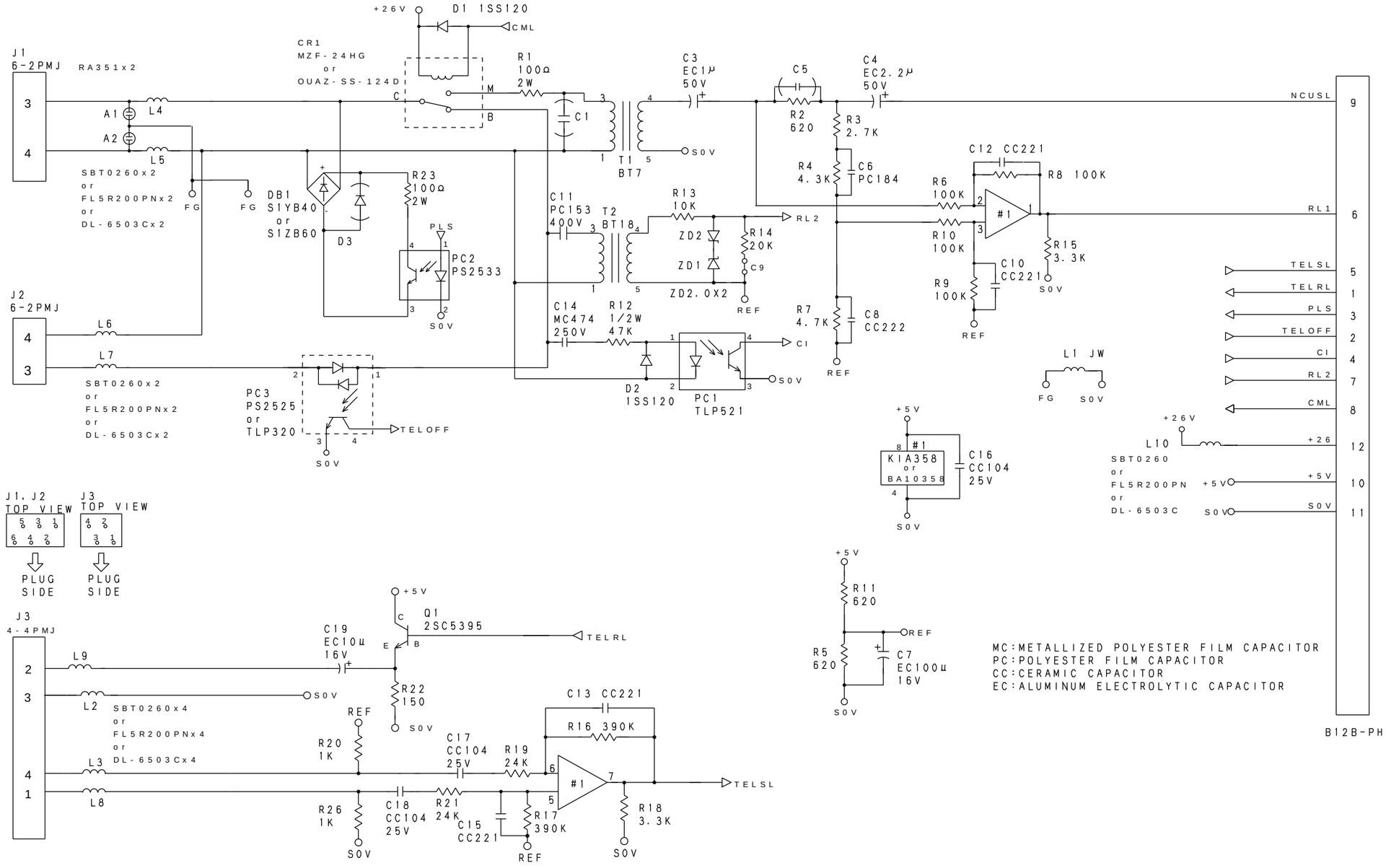
1. UNLESS OTHERWISE SPECIFIED, POWER CONSUMPTION OF RESISTORS IS 1/4W.

2．指示ナキコンデ゛ンサモノ耐圧ハ25V又ハ50Vトスル。

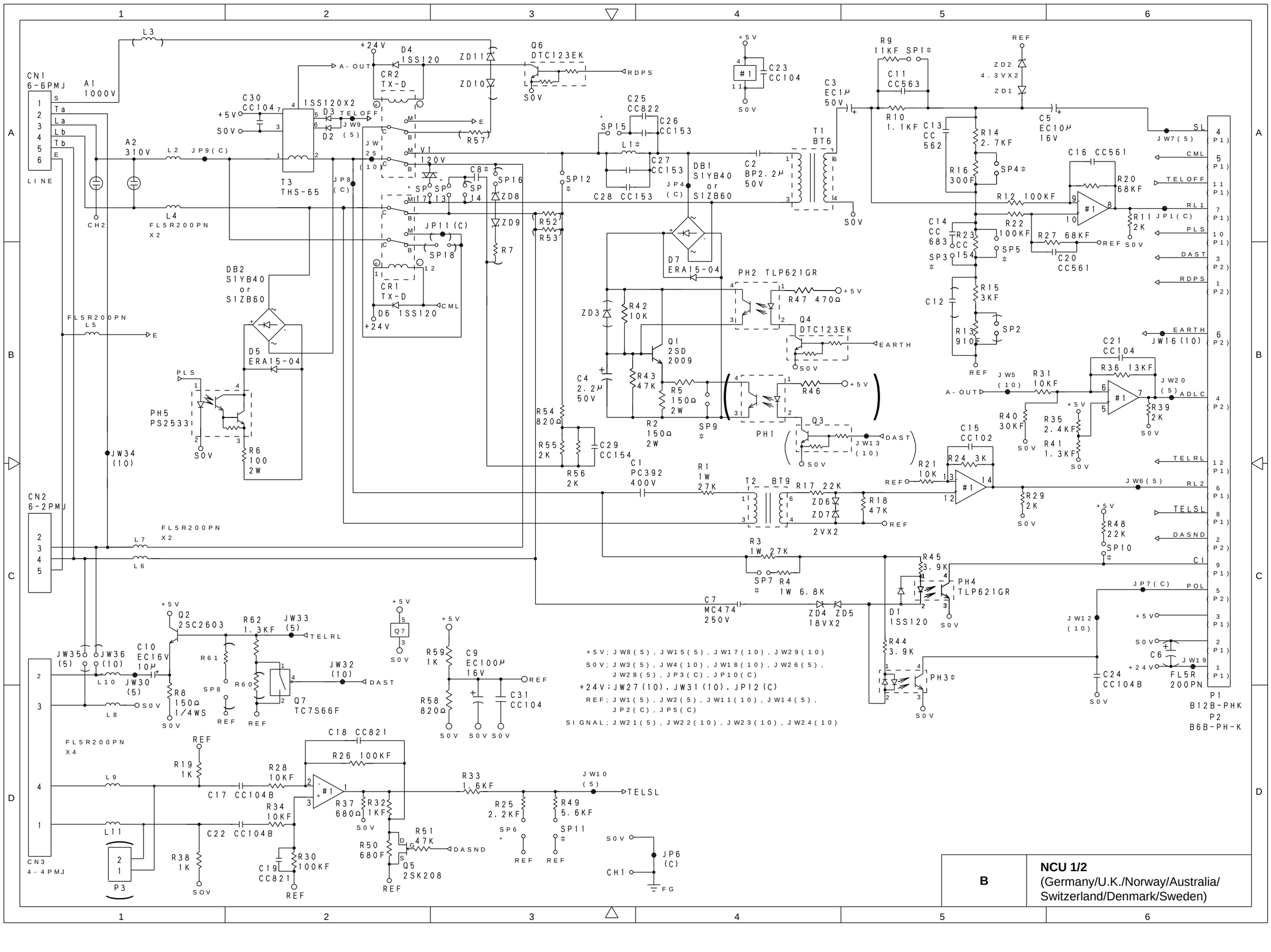
2. UNLESS OTHERWISE SPECIFIED, THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.

3．（ ）内ノ部品ハ未実装トスル。

3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.



B	**NCU** (U.S.A./Canada/Gulf/New Zealand)

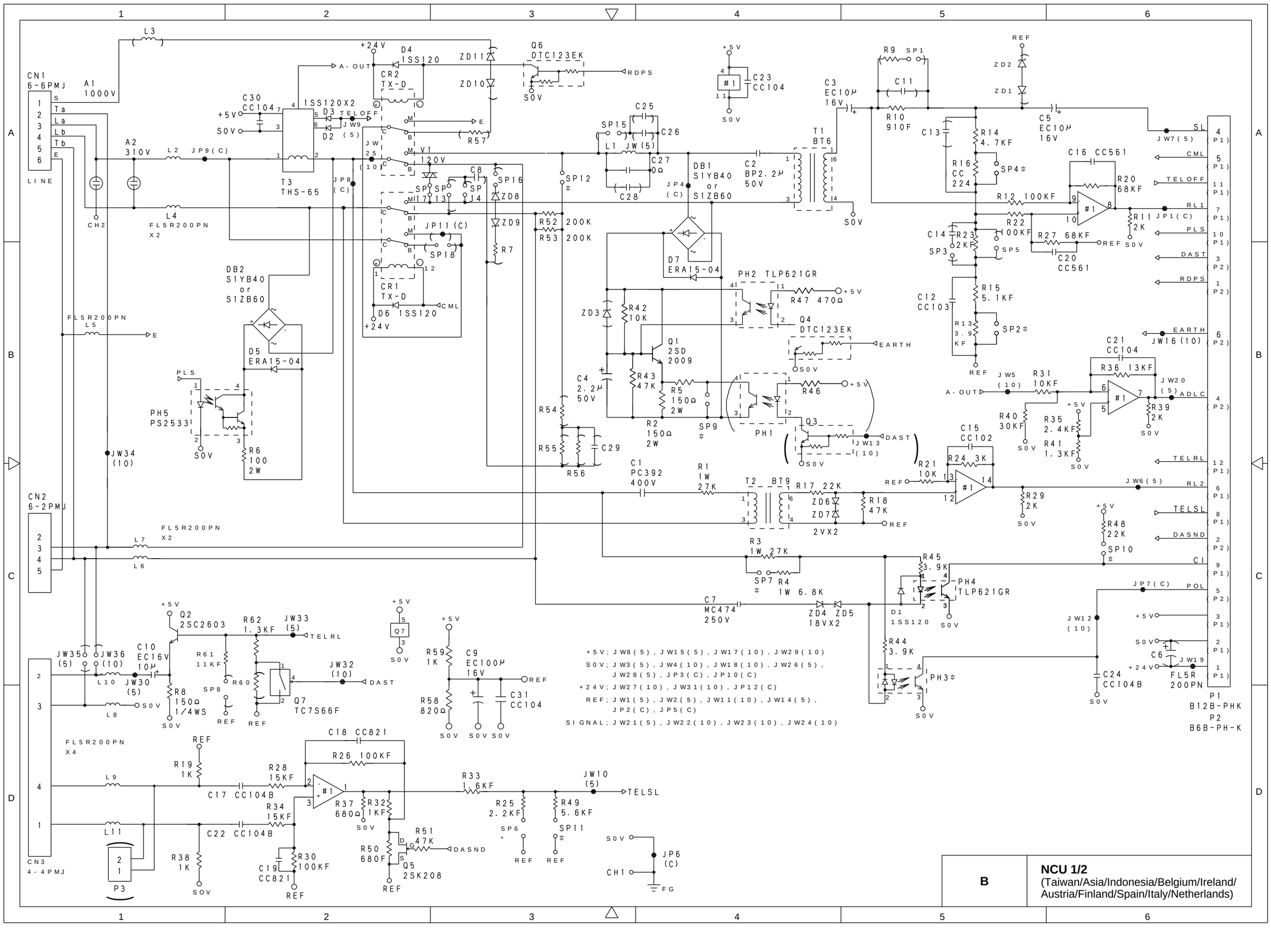


B	**NCU 1/2** (Germany/U.K./Norway/Australia/ Switzerland/Denmark/Sweden)

ITEM	UG4585-0XX NCU363ｸﾐ1AYL2 #		UG4586-0XX NCU363ｸﾐ1BYL2 #		UG4587-0XX NCU363ｸﾐ1CYL2 #			
	03 GER	10 SWI	04 UK	26 SWE	06 ARL	07 NOR	11 IRE	13 DEN
PH3	-	-	TLP620GR	TLP620GR	-	-	-	-
L1	DRL-0033P	DRL-0033P	5mm JUMPER	5mm JUMPER	5mm JUMPER	5mm JUMPER	5mm JUMPER	5mm JUMPER
C8	-	-	PC250B105	PC250B105	-	-	-	-
SP1	-	-	-	-	-	-	-	ASSY
SP3	ASSY	-	-	ASSY	ASSY	ASSY	-	-
SP4	ASSY	-	-	-	ASSY	-	-	ASSY
SP5	-	ASSY	-	-	-	-	-	-
SP6	-	ASSY	-	ASSY	ASSY	-	ASSY	ASSY
SP7	ASSY	-	ASSY	-	-	-	-	-
SP9	-	-	-	-	ASSY	ASSY	-	-
SP10	-	-	-	ASSY	-	ASSY	ASSY	-
SP11	ASSY	ASSY	ASSY	-	ASSY	ASSY	-	-
SP12	-	-	ASSY	-	-	-	-	-
SP13	-	-	ASSY	-	-	-	-	-
SP15	-	ASSY	-	-	-	-	-	-
SP17	ASSY	ASSY	-	ASSY	ASSY	ASSY	ASSY	-

'-' SHOWS UN-MOUNTING

B	**NCU 2/2** (Germany/U.K./Norway/Australia/ Switzerland/Denmark/Sweden)


CN1
6-6PMJ
LINE
CH2
A1
1000V
A2
310V
L3
L4
FL5R200PN
X2
L2
JP9(C)
T3
THS-65
JP8
(C)
+24V
D4
1SS120
CR2
TX-D
A-OUT
ZD11
ZD10
Q6
DTC123EK
RDPS
S0V
C30
CC104
+5V
1SS120X2
D3
TELOFF
JW9
D2 (5)
E
R57
JW
25
(10)
V1
120V
C8
SP16
ZD8
ZD9
R7
SP12
SP15
C25
C26
L1 JW(5)
C27
0Ω
C28
DB1
S1YB40
or
S1ZB60
JP4
(C)
C2
BP2.2μ
50V
T1
BT6
C3
EC10μ
16V
R9
SP1
C11
R10
910F
C5
EC10μ
16V
ZD2
ZD1
REF
SL
JW7(5)
CML
TELOFF
RL1
PLS
DAST
RDPS
EARTH
JW16(10)
ADLC
TELRL
RL2
TELSL
DASND
CI
POL
P1
B12B-PHK
P2
B6B-PH-K
C13
R14
4.7KF
R16
CC
224
SP4*
C16 CC561
R20
68KF
R12 100KF
R22
100KF
R27 68KF
C20
CC561
R11
2K
JP1(C)
C14
R23
2KF
SP3
SP5
R15
5.1KF
C12
CC103
R13
3.9
KF
SP2*
C21
CC104
R36 13KF
JW5
(10)
R31
10KF
A-OUT
R40
30KF
R35
2.4KF
R41
1.3KF
R39
2K
JW20
(5)
C15
CC102
R24 3K
R21
10K
R29
2K
R48
22K
SP10*
JP7(C)
JW12
(10)
C6
C24
CC104B
FL5R
200PN
R45
3.9K
PH4
TLP621GR
D1
1SS120
R44
3.9K
PH3*
C7
MC474
250V
ZD4 ZD5
18VX2
R3
1W 27K
SP7*
R4
1W 6.8K
C1
PC392
400V
R1
1W
27K
T2 BT9
R17 22K
ZD6
ZD7
2VX2
R18
47K
CN2
6-2PMJ
FL5R200PN
X2
L7
L6
JW34
(10)
FL5R200PN
L5
DB2
S1YB40
or
S1ZB60
D5
ERA15-04
PLS
PH5
PS2533
R6
100
2W
R52 200K
R53 200K
D7
ERA15-04
PH2 TLP621GR
R47 470Ω
Q4
DTC123EK
EARTH
ZD3
R42
10K
Q1
2SD
2009
C4
2.2μ
50V
R43
47K
R5
150Ω
2W
R2
150Ω
2W
SP9*
PH1
R46
Q3
JW13
(10)
DAST
R54
R55
R56
C29
JP11(C)
SP18
CR1
TX-D
D6 1SS120
CML
R53 200K
FL5R200PN
X4
L9
L11
L10
L8
JW35
(5)
JW36
(10)
JW30
(5)
C10
EC16V
10μ
R8
150Ω
1/4WS
SP8
R61
11KF
R62
1.3KF
JW33
(5)
TELRL
R60
Q7
TC7S66F
JW32
(10)
DAST
REF
Q2
2SC2603
Q7
R59
1K
C9
EC100μ
16V
R58
820Ω
C31
CC104
C18 CC821
R26 100KF
R19
1K
R28
15KF
C17 CC104B
R34
15KF
C22 CC104B
R38
1K
C19
CC821
R30
100KF
R37
680Ω
R32
1KF
R33
1.6KF
JW10
(5)
TELSL
R25
2.2KF
SP6*
R49
5.6KF
SP11*
R50
680F
R51
47K
DASND
Q5
2SK208
JP6
(C)
CH1
FG
CN3
4-4PMJ
P3
+5V; JW8(5), JW15(5), JW17(10), JW29(10)
S0V; JW3(5), JW4(10), JW18(10), JW26(5), JW28(5), JP3(C), JP10(C)
+24V; JW27(10), JW31(10), JP12(C)
REF; JW1(5), JW2(5), JW11(10), JW14(5), JP2(C), JP5(C)
SIGNAL; JW21(5), JW22(10), JW23(10), JW24(10)
B
NCU 1/2
(Taiwan/Asia/Indonesia/Belgium/Ireland/
Austria/Finland/Spain/Italy/Netherlands)

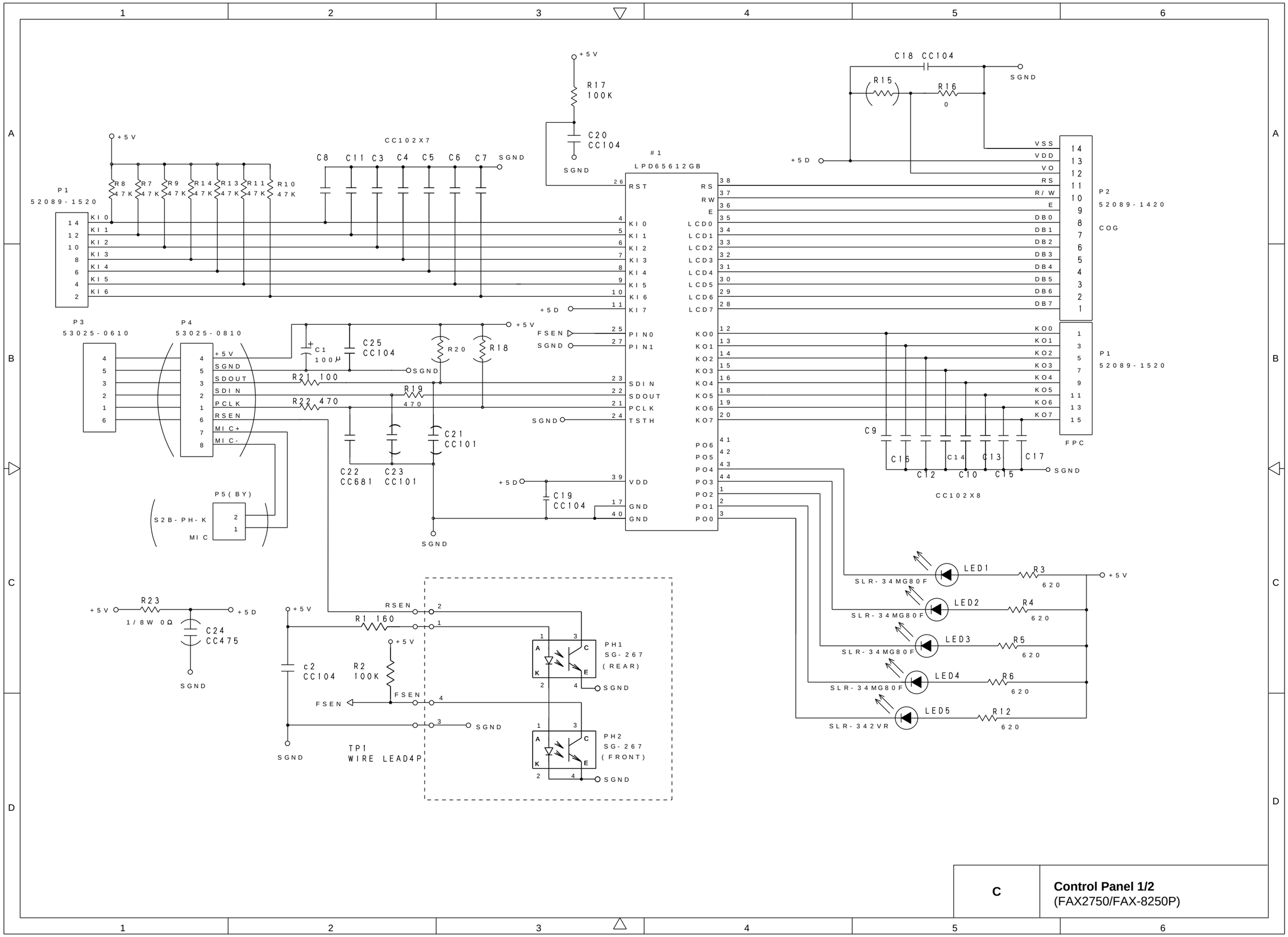
ITEM	UG4588-0XX NCU363ｸﾐ2AYL2 #							UG4589-009 NCU363ｸﾐ2BYL2 #
	08 BEL	12 FIN	14 AUS	15 SPA	16 ITA	23 TWN	40 ASA	09 HOL
PH3	-	-	-	-	-	-	-	TLP620GR
SP2	ASSY	ASSY	ASSY	-	-	-	ASSY	ASSY
SP4	ASSY	ASSY	ASSY	-	-	-	ASSY	ASSY
SP6	ASSY	ASSY	-	-	-	-	ASSY	ASSY
SP7	-	-	-	ASSY	-	-	-	-
SP9	ASSY	-	-	ASSY	-	ASSY	ASSY	ASSY
SP10	-	-	-	ASSY	-	-	-	-
SP11	-	-	ASSY	ASSY	ASSY	ASSY	ASSY	ASSY
SP12	-	-	-	-	-	-	-	ASSY

' - ' SHOWS UN-MOUNTING

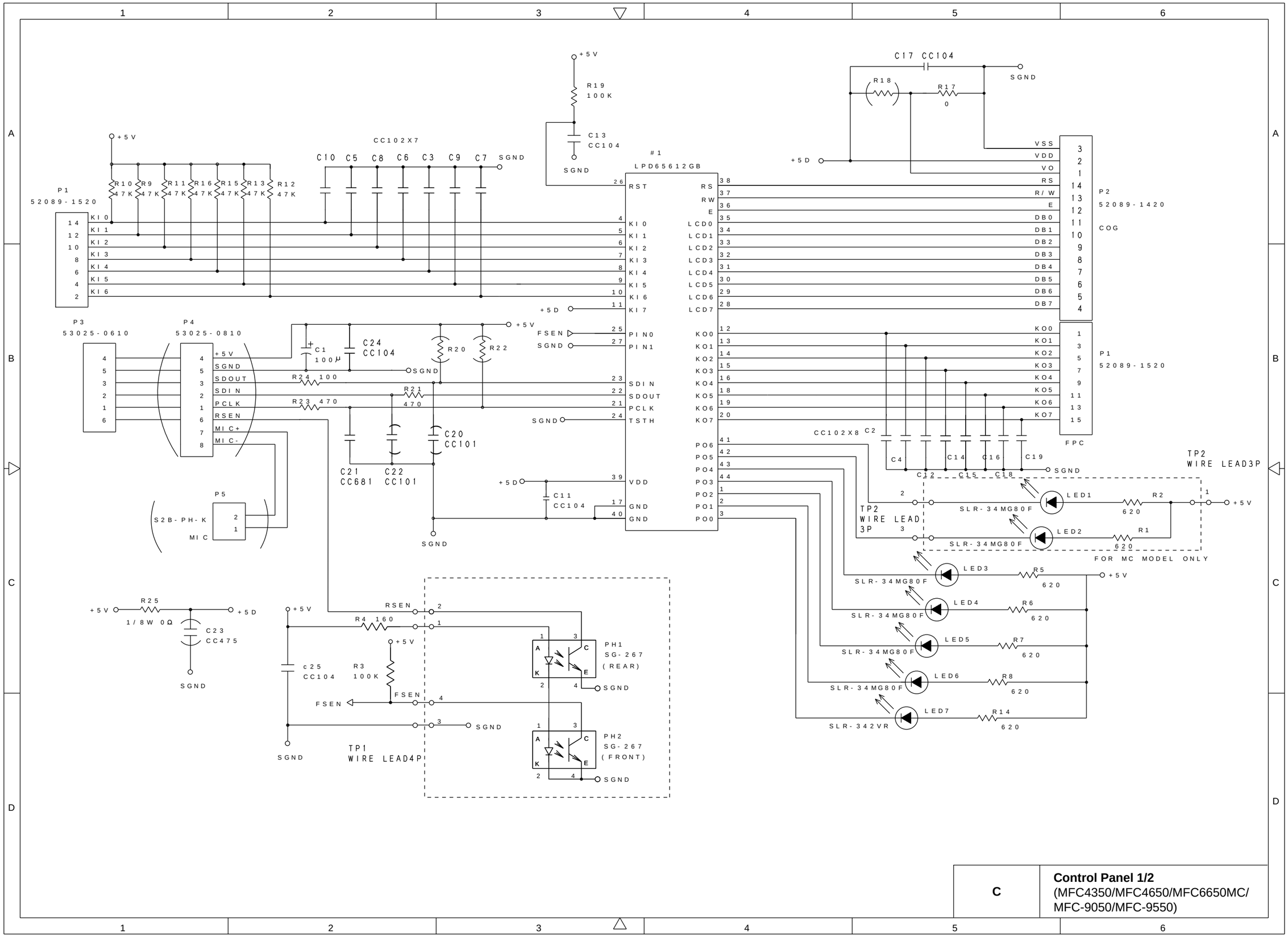
B	**NCU 2/2** (Taiwan/Asia/Indonesia/Belgium/Ireland/ Austria/Finland/Spain/Italy/Netherlands)

+5V; JW8(5), JW15(5), JW17(10), JW29(10)
S0V; JW3(5), JW4(10), JW18(10), JW26(5), JW28(5), JP3(C), JP10(C)
+24V; JW27(10), JW31(10), JP12(C)
REF; JW1(5), JW2(5), JW11(10), JW14(5), JP2(C), JP5(C)
SIGNAL; JW21(5), JW22(10), JW23(10), JW24(10)

B	**NCU** (France)



C	**Control Panel 1/2** (FAX2750/FAX-8250P)



C	**Control Panel 1/2** (MFC4350/MFC4650/MFC6650MC/ MFC-9050/MFC-9550)

YL2 PANEL KEY MATRIX REFERENCE TABLE 1

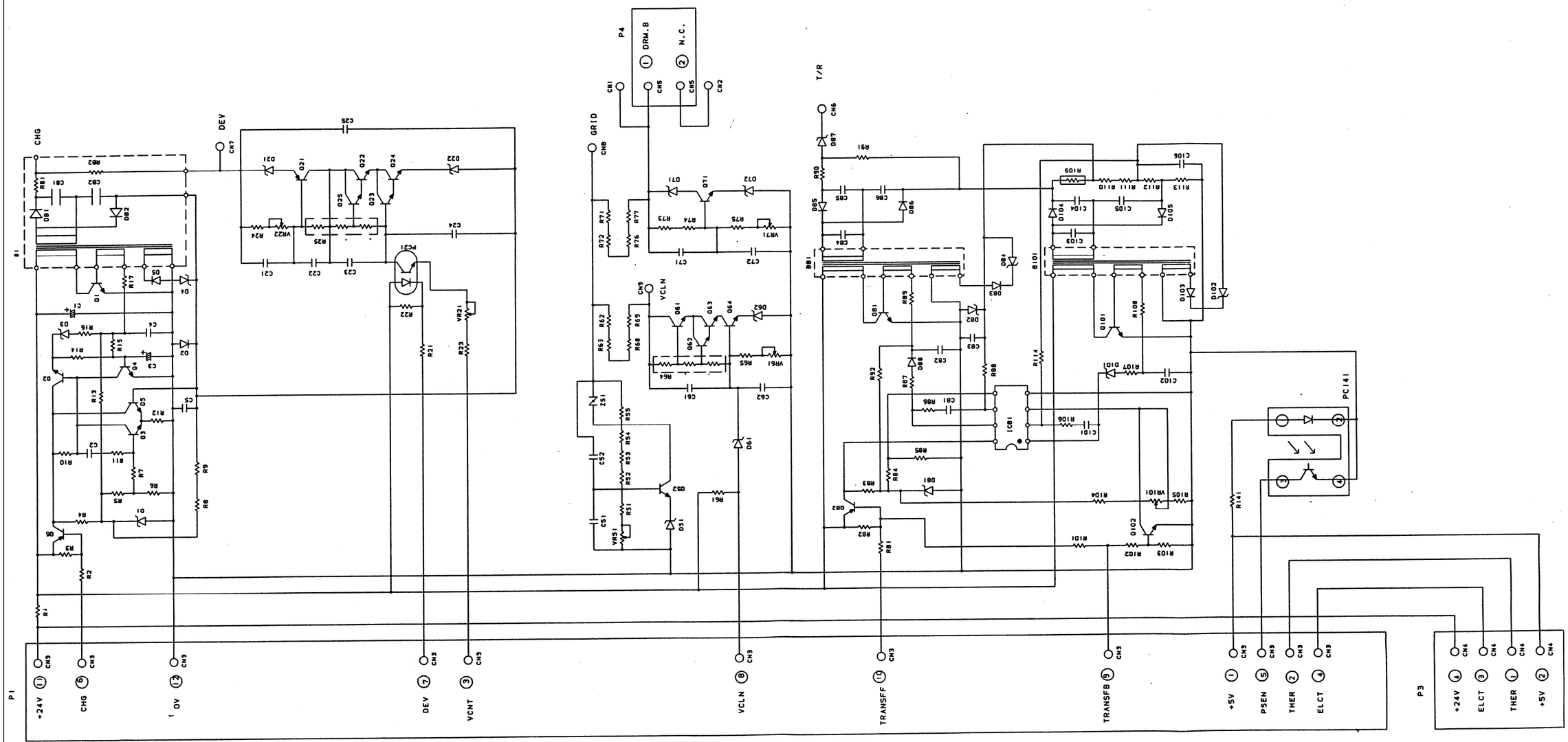
KEY NO.	KEY NAME MC(BASE)	KEY COE
1	Function	01
2	←	07
3	SET	0F
4	→	17
5	Clear	1F
6	Hold	05
7	10KEY-1	0D
8	10KEY-2	09
9	10KEY-3	11
10	Volume High	19
11	Redial/Pause	04
12	10KEY-4	0C
13	10KEY-5	15
14	10KEY-6	14
15	Volume Low	1C
16	Speed Dial	06
17	10KEY-7	0B
18	10KEY-8	0E
19	10KEY-9	16
20	Speaker Phone	03
21	10KEY-*	02
22	10KEY-0	0A
23	10KEY-#	13
24	Shift	12
25	Tel-index	27
26	Resolution	21
27	Mode	31
28	Help/Broadcast	37
29	1TOUCH-01/13	1D
30	1TOUCH-02/14	24
31	1TOUCH-03/15	25
32	1TOUCH-04/16	34
33	1TOUCH-05/17	1E
34	1TOUCH-06/18	26
35	1TOUCH-07/19	23
36	1TOUCH-08/20	33

KEY NO.	KEY NAME MC(BASE)	KEY COE
37	1TOUCH-09/21	1B
38	1TOUCH-10/22	1A
39	1TOUCH-11/23	22
40	1TOUCH-12/24	32
41	Record	39
42	Erase	3B
43	Play	3A
44	On/Off Line	3D
45	FF/Cont	3C
46	Test/Reset	2B
47	Enlarge	29
48	Reduse	2F
49		
50	Copy/Start	2E
51	Sort	35
52	Photo	2D
53	Stop	36
54	Fax/Start	2A
55	Print Priority	3E

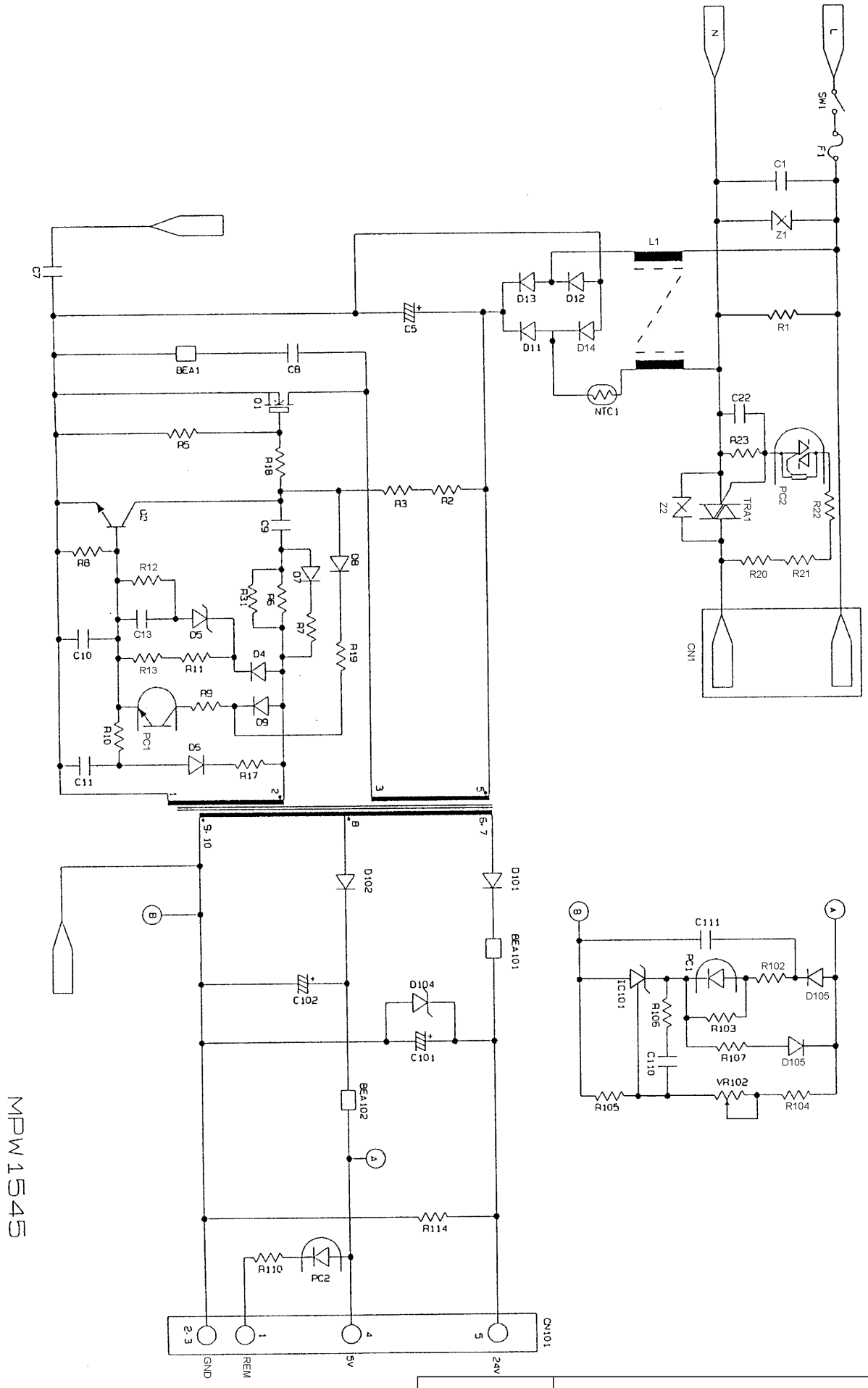
YL2 PANEL KEY MATRIX REFERENCE TABLE 2

	KO0 P1-1P	KO1 P1-3P	KO2 P1-5P	KO3 P1-7P	KO4 P1-9P	KO5 P1-11P	KO6 P1-13P	KO7 P1-15P
KI0 P1-14P	1	8	9	10	26	47	27	41
KI1 P1-12P	21	22	24	38	39	54	40	43
KI2 P1-10P	20	17	23	37	35	46	36	42
KI3 P1-8P	11	12	14	15	30	49	32	45
KI4 P1-6P	6	7	13	29	31	52	51	44
KI5 P1-4P	16	18	19	33	34	50	53	55
KI6 P1-2P	2	3	4	5	25	48	28	

C	Control Panel 2/2

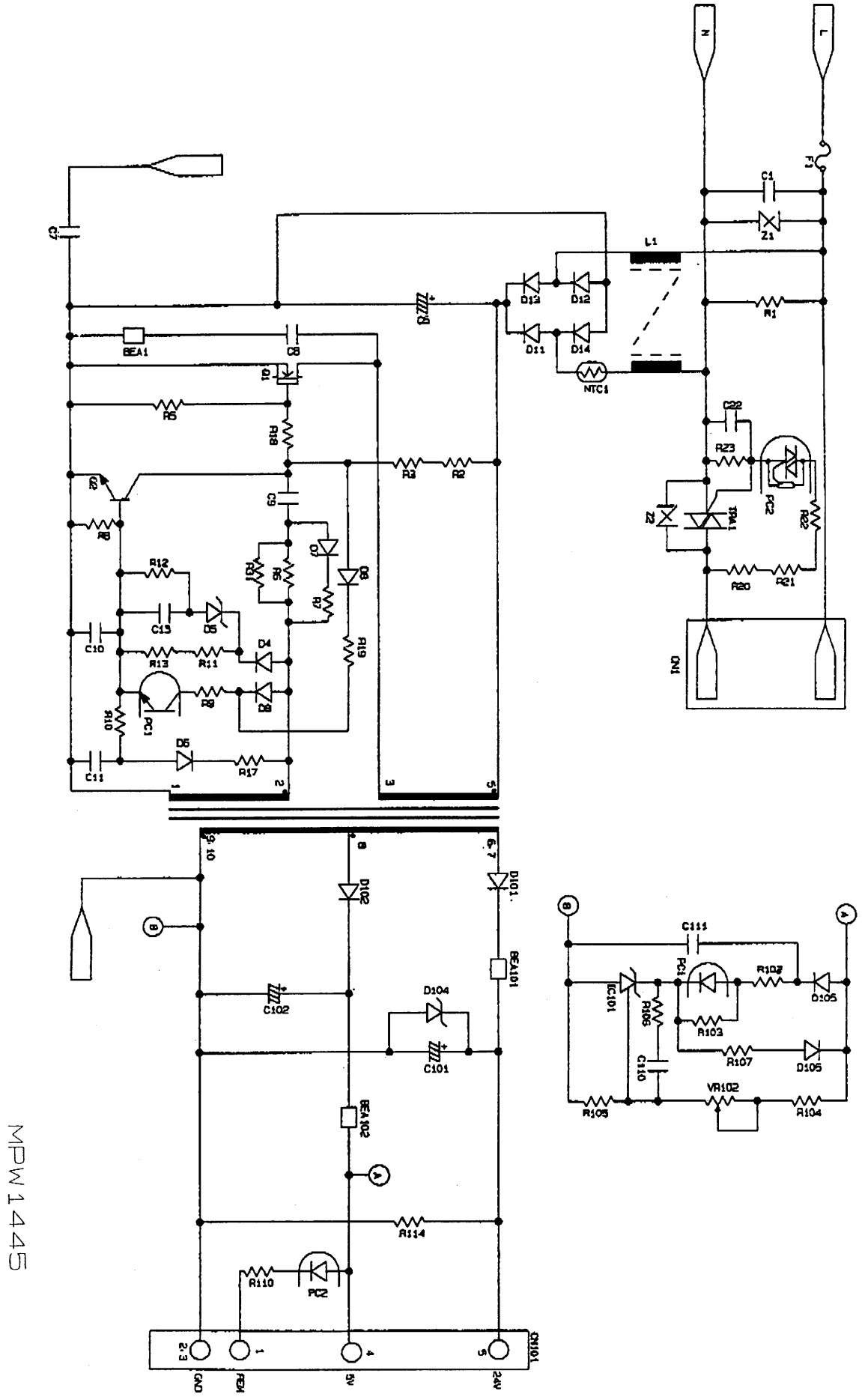


D	**POWER SUPPLY** High-voltage power supply



MPW1545

D	**POWER SUPPLY (100-120V)** Low-voltage power supply



MPW1445

D	**POWER SUPPLY (200-240V)** Low-voltage power supply